November-December 1994

FAA Aviation News

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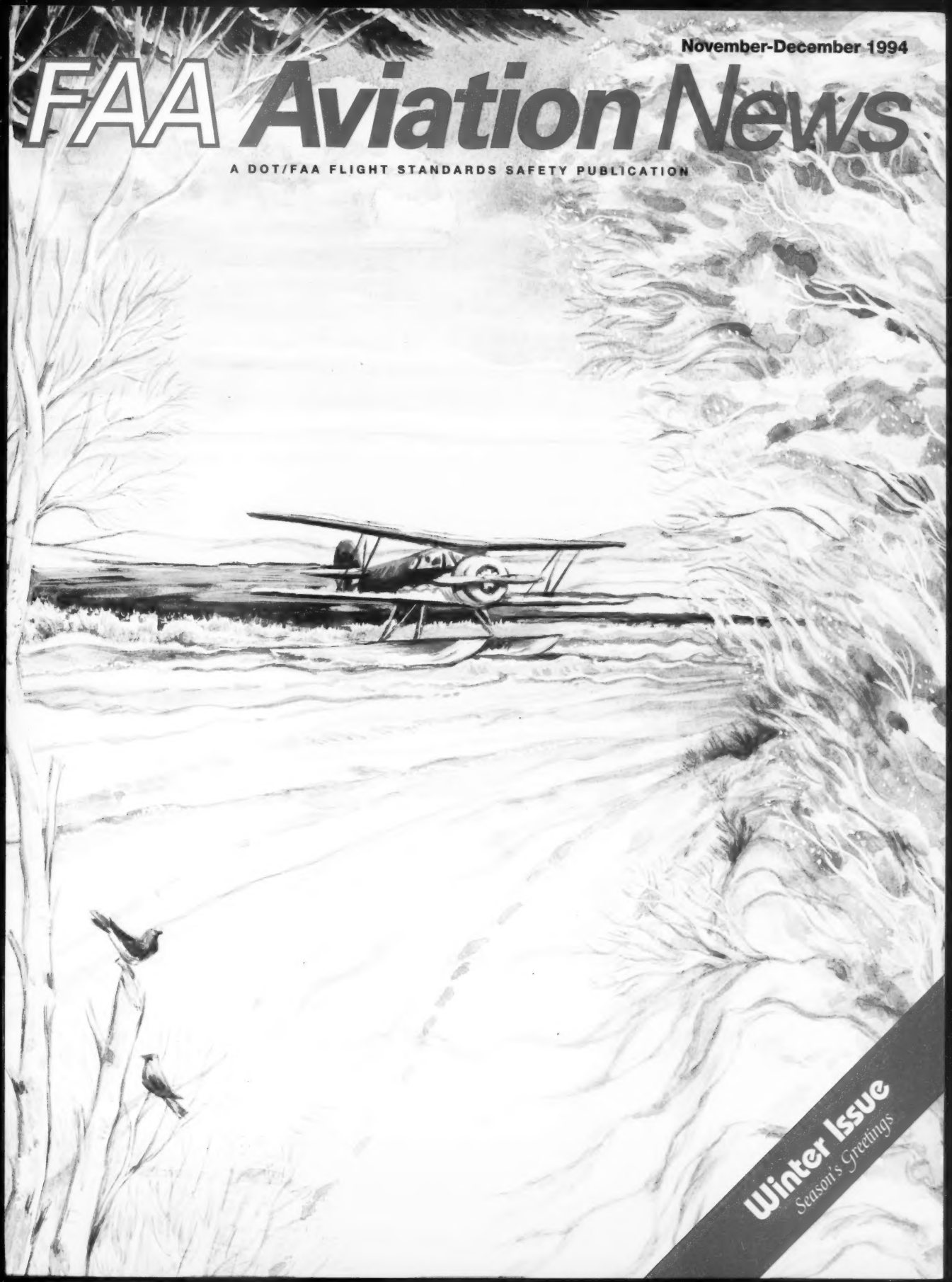

Winter Issue

Season's Greetings

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of Transportation

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The FAA's Flight Standards Service, General Aviation and Commercial Division, *Aviation Safety* Program Branch, AFS–810, Washington, DC 20591; telephone (202) 267–8017; FAX (202) 267–9463; publishes FAA Aviation News in the interest of flight safety. The magazine promotes safety in the air by calling the attention of airmen to current technical, regulatory, and procedural matters affecting the safe operation of aircraft. Although based on current FAA policy and rule interpretations, all printed material herein is advisory or informational in nature and should not be construed to have regulatory effect. The FAA does not officially endorse any goods, services, materials, or products of manufacturers that may be mentioned. **Certain details of accidents described herein have been altered to protect the privacy of those involved.**

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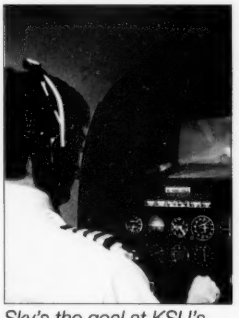


Sky's the goal at KSU's Aero Department. See page 23.

Is Flight Standards Giving Lip Service to Partnership?

by Linda Tavlin

We have been hearing that the Flight Standards Service considers themselves partners with industry. Is it true?

Judging by some of its recent activities, I have to say Flight Standards is moving in the right direction and, by the way, so is industry!

Flight Standards and the Airlines

Flight Standards' Southern Region has had a long interest in its sister civil aviation authorities in Central and South America. With prevention in mind, Southern Region offered training to foreign authorities, and they work hand-in-hand with foreign authorities to get initial buy-in, make them part of the process, and include them in any local inspections Flight Standards may be making. It's a two-way learning situation.

In Flight Standards' Northwest Mountain Region, safety inspectors were involved in a maintenance safety program in conjunction with the Aviation Safety Program (formerly the Accident Prevention Program). They went to industry and conducted regulatory compliance lectures which were applauded by industry. This has been so successful, the region can't keep up with the requests from industry!

The Eastern Region also has many interesting partnership projects. Most unique was a joint airline/FAA study on human factors in maintenance. The FAA paid for an academic study to identify areas that could affect human factors problems in maintenance. This was an interesting partnership of government, industry, and academia coming together to address maintenance concerns. This continuing project has the potential to make great strides in uncharted territory and be a model for similar industry safety program in the future.

The Alaska Region has just completed what turned out to be a dynamic and unique project. They participated in a "process workshop" with not just one, but two, carriers. Participating with the FAA's Anchorage FSDO was Mark Air and Era Aviation/Helicopter. They addressed several interesting issues, such as MMEL's, deicing training, and the ever popular topic of standardization. However, this region is in the position to proactively address the standardization issue and is making plans to do that. Stay tuned.

Flight Standards and Repair Stations

What about including repair stations in the partnership relationship? The news is good. In the New England Region's Windsor Locks Flight Standards District Office, a program has been running for at least five years. They have conducted seminars to not just help repair stations comply with the current rules but to help them fill out their applications and obtain certification. The genesis of this came from frustration on the part of inspectors who saw ways they could help industry in the facilitation of compliance. After wondering how to go about this, they came up with the proactive approach of partnership through education.

Flight Standards' Continuing Commitment

The Aircraft Maintenance Division of Flight Standards reached out to industry with its first annual international maintenance symposium. They brought governments and industry together from all over the world and asked, "What can we do to improve the way we do business?"

Industry, along with the Air Transportation Division of Flight Standards, has developed a training program designed as an alternative means of qualifying, certificating, training, and enhancing the competency of crew coordination. This program, the Advanced Qualification Program (AQP), was developed from recommendations made by a task force which included flight operations management personnel from six major airlines, human factors training experts, FAA training representatives, Flight Standards personnel, and members of industry group training committees. One of the most important features of this program was the focus on crew resource management and human factors and not just cockpit resource management.

Continued on page 15

H. Dean Chamberlain

Safety Begins at Home

by H. Dean Chamberlain, *Associate Editor*

Winter Flying

Winterizing your aircraft is easy, but what about yourself?

Amazing how quiet it can be in Washington on the Friday before the long Labor Day holiday. What made this day especially significant is that the weather forecast for the area called for temperatures in the low to mid-70's—five to 10 degrees below normal. The date and the lower temperatures say summer is about over. Fall and winter are just around the corner. And when this article is published in the November/December issue, winter-like temperatures will be felt over much of the country. For those in the northern tier states, and especially in Alaska and Canada, winter weather starts even earlier. With winter temperatures here for some and even colder weather coming for many, now is the time to remember to winterize both your aircraft and yourself if you haven't already done so.

Winterizing your aircraft is easy. You only need to pull out your aircraft's operating manuals and follow their instructions. It is even easier if you let your mechanic do it. Your A&P will check your aircraft for such things as the installation of the proper weight engine oil and lubrication for your local operating conditions, whether or not a winterization kit should be installed, whether or not your control cables, if applicable, need adjustment for the change in seasonal temperatures, the condition and charge of your aircraft's battery and electrical system, whether to remove your aircraft's wheel covers or fairings, if installed, to avoid the possibility of snow and ice freezing in them or even installing skis if conditions warrant, and, arguably the most important check of all, your A&P should check your aircraft's heating system for safe operation.

Carbon Monoxide

A defective heating system can allow carbon monoxide (CO) gas to enter the aircraft and either incapacitate or reduce a pilot's or crew's alertness to the point where the flight might be in jeopardy. Aircraft that use a heater shroud on the exhaust system for heat are particularly susceptible to this danger.

Carbon monoxide poisoning is particularly dangerous because CO is a colorless, tasteless, and odorless gas that cannot be detected through a pilot's normal senses. Although there are small, "spot" CO detectors on the market that many pilots use in their aircraft, some recent reports question their effectiveness. If you use such detectors, you need to remember the detector must to be "fresh" to work. You can't stick one on the instrument panel and leave it there forever and expect it to function, you need to follow the manufacturer's instructions for using them.

In many cases, the most effective way to detect possible CO poisoning is by knowing its physiological warning signs. The *Airman's Information Manual* (AIM), Chapter 8, Medical Facts For Pilots, states in paragraph 8–4, Carbon Monoxide Poisoning in Flight, that if a pilot detects the odor of exhaust or experiences symptoms of headache, drowsiness, or dizziness while using the heater, the pilot should suspect carbon monoxide poisoning and immediately shut off the heater and open all air vents. If symptoms are severe or continue after landing, medical treatment should be sought.

The AIM notes that even minute quantities of carbon monoxide over a period of time can significantly reduce the blood's ability to carry oxygen. This inability of the blood to carry oxygen because of CO poisoning in effect produces hypoxia in a pilot. The AIM provides a detailed description of the effects of hypoxia on pilots for those not familiar with its symptoms.

Pilots in flight may not be the only victims of CO poisoning. Pilots and everyone working in closed hangars or garages with aircraft or other types of engines running are all vulnerable to CO poisoning. Anyone in an enclosed area, such as a car, camper, cabin, or workshop with an engine or any type of combustion space heater operating using any type of carbon fuel such as gasoline, kerosene, heating oil, etc., is at risk of CO poisoning and possible death without adequate fresh air ventilation and a properly functioning heater. Each year there are always people killed

while sleeping either in their homes or campers by CO poisoning. CO is always dangerous.

Hypothermia

As shown, preparing an aircraft for winter operations is relatively easy as long as appropriate safety measures and the manufacturer's instructions are followed. The hardest part of preparing for winter operations may be preparing the pilot and passengers for winter. Everyone accepts the fact that aircraft and vehicles must be prepared for winter conditions. Not every pilot or passenger believes he or she must also prepare for winter.

Part of the problem may be that many people believe nothing bad can happen to them. For lack of a better phrase, you can call it the "other guy syndrome"—things only happen to the other guy. Although pilots are susceptible to this danger, there may be another problem involving passengers. Pilots normally tell their passengers that flying is safer than say, driving. Although statistically true, flying is not without risk. But because some pilots may downplay flying's risks to their passengers in order to get them to fly, those pilots may later find it more difficult to convince those same passengers that they must prepare for the possibility of an off-airport landing or accident while flying. The situation is sort of a Catch-22 situation. "If flying is safe, why must I prepare for a crash?" they may ask. It is a tough question to answer. Depending upon the age of the passengers, you might be able to say, "Because I am the (mommy/daddy), and I say so." That answer may work for some, but not all of your passengers.

Be Prepared to Walk Home

But each year, there are incidents and accidents that place aircraft occupants in life-threatening situations simply because they were not prepared or dressed for cold weather. Although everyone in the safety business uses the trite expression that says whenever people leave home they should dress to walk back home, few travelers do. It is like preaching cold weather safety to the choir only to discover after the service that the choir members drove to the service in their robes with their coats in the trunk.

The point is, in case of an accident going to the airport, while flying, or returning home from the airport in freezing weather, or in those situations where wind and/or wet conditions make hypothermia a life-threatening factor, and where help is not immediately available, the only protection a person, or a seriously injured or trapped pilot, driver, or passenger might have is what that person is wearing at the time of impact. At best, if they have some mobility, they might be able to reach a warm coat or blanket stored in the cabin for protection. Having something within reach is important. There was a tragic crash a number of years ago where the parents died in a winter crash on the West Coast, but their child survived because they were able to put him in a sleeping bag. The child suffered severe cold injuries, *but he survived*. Just remember, having something out of reach is the same as not having it.

Although we are talking about the possibility of an aircraft accident involving exposing its pilot and any passengers to the dangers of hypothermia, you don't have to be in an aircraft accident to be at risk. Like a recent story that made national headlines involving a young couple and baby in the western U.S. and their winter survival struggle to stay alive on a trip in their vehicle, you could be at risk from hypothermia driving to the airport, while out in your boat, or even in your own home under certain conditions.

If your vehicle breaks down along a deserted, snow-covered road, or you are caught in a sudden snow storm out along an interstate highway, or you land low on fuel at a small airport where everything is closed for the night, you might be at risk from the cold and the associated dangers of hypothermia if you can't find a source of heat and/or adequate shelter. Although we are referring to hypothermia during winter, you don't have to be in extreme cold to be at risk. The right combination of wind and temperature can expose anyone to the risk of hypothermia. And anytime you are wet and the right environmental conditions exist, you are in danger without access to warm, dry clothing, a source of heat, and adequate shelter. How do you find such shelter?

One answer might be that friendly motel that leaves the light on for you. Another answer might be a friendly FBO that just happens to come by the airport and takes you to that friendly motel. But if there is not a light on for miles, and you can't find a telephone and your cellular phone won't work, what should you do now or what could you have done before you left home?

What If?

Before you leave home you should always consider your "what if" options regardless of the season, prepare for those options, and then do one very important final thing that may save your life and the lives of those traveling with you. The first option is what we will call the short-term, 24 hours or less, option. We could even call it the inconvenient overnight stay in friendly surroundings option. The second option is the more serious, long-term, potentially life-threatening option that involves more than 24 hours in potentially hostile surroundings. Hostile in this case is our version of that famous World War I pilot and novelist, Snoopy, from the Peanuts cartoon series, and his famous story intro that always begins with, "It was a dark and stormy night . . . . "

Short Term

The first option is easy to prepare for. This option is for those routine trips by aircraft or vehicle where you are in familiar surroundings, and where friends know generally where you are going and when to expect you back. The assumption is if you don't return by a specified time, someone who knows where to look for you will come looking for you. If you are flying that someone is the FAA and your local search and rescue organization, such as the Civil Air Patrol, if you have filed a flight plan. This is why it is important that all pilots file a flight plan. Your role in all of this is to sit tight and "survive" until found. To prepare for such a trip, you should wear—the ideal case—or have access to warm clothing that includes coat, gloves, most importantly a warm hat, and footwear appropriate for your loca

tion and the expected weather for the next 24 hours that provides adequate warmth and protection until help arrives. A blanket or sleeping bag is also great to have along in cold weather.

This option assumes that help is readily available and that you do not want or need to become a scout or a self-reliant, solo alpine camper. This situation might include a precautionary off-airport landing with no or very minor bumps and bruises. Your aircraft or vehicle can and will provide you suitable shelter, except in extreme cold.

Although not required for such a short-term situation, items such as a full tank of fuel, flashlight, a snow shovel, chains for your truck or car, jumper cables, rain or foul-weather gear, exposure suit if operating over or around water, sleeping bag or blankets, food and water, CB radio, cellular telephone, AM/FM radio, matches and candles for light and heat, and locating devices such as flares, ELT, a signal mirror, smoke devices, an emergency position indicating radio beacon (EPIRB), etc., all make such a short inconvenience easier to endure. Many of these items may already be carried in your car or aircraft, and if not, they can easily be added as a small winter survival kit.

The basic idea for this option is for you to be able to wait for rescue either that day or the following morning. You may not be comfortable, but you can manage. In this scenario, if you are in an aircraft, your radio and ELT are usable and should be used as appropriate.

Long Term

But what if help cannot come right away, or no one knows where to find you, or there was an serious accident involving injuries or there is significant damage to the aircraft and its radio and ELT are destroyed, or your aircraft or vehicle is damaged beyond use except for survival items you might be able to make from it, and the damage prevents you from using the wreckage even for shelter, how do you cope?

Option two takes the suggested items of option one and makes them mandatory. Obviously, the required items will vary depending upon your mode of transportation. Then option two adds such items as a good first aid kit with instructions; a portable shelter of some type such as a tent, tube tent, or tarp; a compass; and enough extra items for you and those with you to survive a number of days without outside help. Food and safe water become more important in this scenario.

The Future?

Equally important are two nice-to-have—many will say critical—items that many pilots, boaters, and hikers now own. The items are a portable GPS receiver and an aircraft and/or maritime frequency radio if you are near a major body of water. The ideal package would include a small 406 MHz locating beacon that includes owner identification as part of its transmission along with a GPS unit that would provide positioning information to the 406 beacon. With a one-hit satellite alert response capability, the 406 MHz beacon with GPS interface is arguably the best search and rescue (SAR) system available for SAR.

Long-term Survival and Being Found

Long-term survival includes the possibility of self-rescue. You may have to walk for help. But before you decide to walk out, you must consider one important fact. It is normally easier for rescuers to find a vehicle or aircraft than it is to find a person. Anything you can do to make your aircraft, vehicle, or self more visible from the air increases your change of being found. Ways to improve your chances of being found include clearing off any snow; starting a signal fire; igniting a smoke signal if you think someone will see it or you hear an aircraft, etc.; tramping down snow as a signal or laying out messages with whatever is available on the ground as a way of catching a searcher's attention helps; but if you are laying out messages, you need to make very large X's, spell out SOS, or use the aviation code in the AIM on rescue. One of the best signaling devices on land or sea is a simple signal mirror that can be aimed. In bright sun, a signal mirror or anything shiny that flashes, can be seen for miles. A good short distance signaling device is a loud whistle. A whistle can be heard at a much greater distance than a human voice; plus it saves the voice.

Making Yourself Visible

And speaking of being found, everyone should always remember that one of the hardest things to find from the air is an aircraft that crashes vertically into any type of forest in the summer or into a grove of evergreen trees anytime of the year. If the aircraft breaks up or crumbles into a small pile of debris, it may never be found. Equally as hard to find is an aircraft or vehicle that slides under such trees without causing damage to the surrounding area. Without some visible sign of damage to the surrounding trees, area, etc., the aircraft could remain hidden for weeks, months, or years until someone just happens to walk upon it.

And since we are expanding our winter safety discussion beyond winter flight operations, we must remember there have been cases of vehicles and aircraft going over embankments at night that have not been found for several days because no one saw the initial accident, and the vehicle or aircraft was not visible from the roadway or runway.

Add some new snow to bury a white aircraft or vehicle and the problem becomes almost impossible without some type of external signal such as an ELT signal, some type of light, or some other means of making the aircraft or vehicle more visible such as a colored signal panel, tarp, blanket, or even a yellow raincoat to demonstrate one creative way of marking an accident site. A pilot or hunter wearing camouflage clothing or clothing that matches the terrain must work very hard to be seen. The same is true of any vehicle that matches its surroundings.

An example of this type of situation was the story this summer about an aircraft that crashed in a desert area about a year ago that was not found until this summer. According to the story, the tan-colored aircraft disintegrated in the crash. Because the color of the debris so closely matched the rough, desert terrain, the aircraft was virtually invisible to searchers. Only through the year-long personal efforts of one searcher was the crash site discovered.

Recreational Equipment Inc.

Some ways to make yourself and your aircraft or vehicle more visible include any thing that increases the contrast between you and your surroundings such as contrasting color, texture, shape, light reflectivity, fire, smoke, flares, or flashing signal.

Surviving Until Help Arrives

Being found is only part of the survival challenge. Surviving until being found is the most critical part of the survival equation. The following list of items may help. You may want to include some or all in your own survival kit. Although there are many good commercially prepared survival kits available, it is not difficult to make your own. Common sense and knowledge of your local weather conditions make building such a kit rather simple.

The basic requirements for any survival situation can be broken down to a means to treat or stabilize any medical emergency which means providing basic survival first aid that treats the following types of problems in this order, start the breathing; stop the bleeding; treat for shock; and then treat anything else; provide protection from the elements; provide adequate water, the most important, and food; having a means of determining your location; and having a means of helping to be found or of self-rescue. Probably the three most important items in any situation are self-confidence, common sense, and patience.

The following two military survival manuals available from a U.S. Government Book Store in a major city near you, or from the U.S. Government Printing Office book store in Washington, DC, provide basic outdoor survival information for any type of environment pilots, sailors, hikers, hunters, and campers might find themselves in throughout the world. The best and larger of the two is the relatively new, Headquarters, Department of the Army training manual, FM 21-76, titled, *Survival*, dated June 1992. It is an excellent resource and reference for world-wide survival situations. Included in its pages are photographs of edible as well as dangerous plants, animals and sea life The other reference is a Department of the Air Force booklet titled, *Aircrew Survival*, AF Pamphlet 64-5, dated September 1, 1985. Small enough for your flight bag or a large pocket, the four and a half inch by seven inch water resistant spiral-end bound 122 page booklet says of itself, "This pamphlet is designed to aid your survival and rescue efforts regardless of geographic location or climatic conditions. It describes, in outline form, the basic survival skills which you have learned. It will assist you in recognizing and using the natural resources at hand. This information plus your will to survive are necessary to ensure your survival." Although designed as a basic military aircrew escape and evasion survival manual, it provides the basic information needed to allow anyone to cope with an emergency outdoor survival situation.

There are other booklets and pamphlets available from the U.S. Government, the Red Cross, the National Weather Service, the U.S. Coast Guard, and other state and local agencies that provide survival information for anything from being adrift on your boat, to being stranded in your car or home during a blizzard, to surviving a hurricane or tornado, to living through an earthquake.

In most cases, the basic information applies equally as well to whatever type of survival situation you find yourself in including an aircraft accident.

All such emergency manuals and references stress the importance of prior planning, preparedness, practice and training, and taking the time to analyze the survival situation to ensure you are making the best decision possible under the circumstances.

How To Call For Help

The single most important thing anyone can do to ensure their own rescue in a survivable situation is to let a dependable person know where they are going and when they will be returning. Because without that information, no one may ever know you need help until it may be too late for them to help you. If you are flying, you should always file and follow a flight plan. If you are filing a VFR flight plan, you need to remember to activate it and equally important, you need to close it after arrival. Air traffic control closes IFR flight plans after the IFR aircraft lands.

If you are boating, you should always leave a float plan with a dependable person. And if you are driving away from other people and vehicles, you should always leave word with someone as to where you are going and when you will arrive or return. The same applies if you are a hiker, camper, hunter, or someone who likes to fish in remote areas.

The key element is to let help know when help is needed either through a radioed or telephoned message, emergency signal, or the simple expiration of the time to be back.

History has recorded miraculous survival stories where the only two survival tools available were human ingenuity and a strong desire to live. But like that old aviator saying about smart pilots are those that avoid those situations where they might have to use their superior flying skills, the same can be said of winter survival. Everyone should use their superior knowledge, judgement, and preparation to avoid those situations where they might have to prove they can survive. But just in case you can't avoid a survival situation, you might want to be prepared. The life you save might be your own.

And if you are flying or boating, periodically check your ELT or locator beacon, especially at the end of each trip, to ensure it is not transmitting a false alert signal. You can also help others by periodically checking the emergency frequencies to see if someone may be transmitting a distress signal near you. The U.S. Air Force and Coast Guard Rescue Coordination Centers will thank you in either case.

Remember, safety begins at home.■

Winter Clothing

Are some types of winter clothing better than others in a survival situation? Like all comparison answers, it depends upon your situation. In many cases, today's hi-tech clothing is better than traditional fabrics and materials. But, in certain cases, traditional, natural materials are better. So how do you tell which one is best for you? Your answers to the following questions will help you decide.What is your intended purpose for the items, where will you be using the equipment or your intended operating environment, and what is your fire risk?

Let's start with your operating environment. Since the greatest cold weather danger is hypothermia, we want to avoid or reduce our exposure to hypothermia to at least an acceptable level by having access to some type of adequate shelter. We are using the term "shelter" very broadly. One unidentified writer once described clothing as the first layer of our own personal environmental shelter that happens to be located next to our skin. Taken in this context, you then design your clothing and other shelter items to be part of a total environmental system that provides the desired degree of personal protection.

Regardless of how you think of clothing or shelter, the two greatest natural elements that contribute to hypothermia are wind and water. The body simply loses more heat when it is wet than when it is dry, and wind accelerates the loss of body heat. Simply stated, we must protect ourselves against the effects of wind and water.

Of the two items, let's start with wind first because it is the easiest to control. Both traditional and synthetic materials can be made windproof. From close-weaved cotton shells, both coated and non-coated, to the latest windproof synthetic fabrics, we don't think anyone should have a problem finding a windproof fabric if in fact you want one.

As we said, the greatest risk for anyone in cold weather is water. You may fall in water. You may be drenched by rain or wet snow. Or, you may become wet through excessive perspiration. Regardless of how you might become wet, you are at risk for two reasons. The first one is as we said, the body loses vital body heat faster when wet than when dry. The second problem is some clothing loses its ability to insulate and keep you warm when it becomes wet.

Certain fabrics, such as cotton and goose down, can lose most if not all of their insulating value when wet. Combine this loss of insulation with the body's rapid loss of heat when wet, and anyone wearing one of these fabrics is at risk in a wet-cold environment. This is why anyone operating in a wet-cold environment must consider the risk of becoming wet when wearing or using such fabrics.

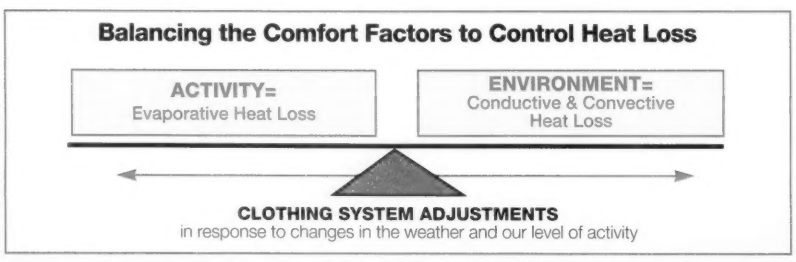
Although high-quality down is used in many very-high priced sleeping bags and outer garments because of its superior insulating ability when dry and its ability to be compressed into a very small space such as a tightly rolled sleeping bag that can later be fluffed out to provide one of the best insulating materials known, potential users in wet areas must be aware of its potential loss of insulating value when wet. In a survival situation where you may not have a second chance, your life could depend upon what you are wearing to keep you warm. And the problem with many aircraft accidents is that bad weather is a factor in many of them. So the possibility exists that in an aircraft accident in cold weather, you may get wet.

Although down may be a potential problem in a wet-cold situation, it is one of the best insulating materials in a dry-cold environment or where you can protect it from water saturation. Down is still the standard by which all other insulating materials is compared for warmth on an ounce-for-ounce basis.

In case of a crash, are you prepared?

If you are potentially at risk with some materials in a wet-cold environment, what are your options? Wool is one. Wool still provides some insulating value when wet. For those who don't like wool, then one of the synthetic insulating materials may be the best choice. Today, manufacturers make both clothing and sleeping bags in several types of synthetic material that can provide insulation even when wet. When looking at such items, you want to consider such elements as water retention, the less the better; the insulating value especially when wet; how quickly the item can be dried out; how the item is constructed because some inexpensive techniques allow the insulating material to shift in the item and cause cold spots; its compressibility since most synthetic materials are bulkier than down; and an important item is cost. Regardless of insulating material used in the construction of any item, quality construction will always cost more than less-expensive constructed items.

But are synthetic materials always the best choice? The answer to that question is a qualified no. The problem with most synthetic items is what happens to it in a fire. Specifically, the problem is how the item burns or worst melts when heated beyond a certain temperature. Unless you crash because of fuel starvation, and then there is still a potential fire problem, there is always the chance of fire in any aircraft crash. In a fire, natural fabrics such as cotton may minimize fire injuries compared to some synthetic fabrics because of the way they burn.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THE PAPER AND INK USE
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The reason is synthetic fabrics may melt and cause more damage to the body than a fabric that might only burn or char such as cotton. Even with the special high temperature flight suits used by the military that are designed to protect against fire, there have been problems with pilots wearing either synthetic or blends of synthetic and natural fabric underwear under their flight suits. There have been reports of pilots that have been very badly burned when their synthetic or blended T-shirts burned or melted against their skin.

Although most civilian pilots seldom think about their potential fire or burn risk while flying and how they can dress to minimize those risks, in this winter issue, we thought it important enough to point out the risk so that when you are deciding on what clothing to wear on a flight you make that choice based upon the fire risk various types of clothing present as well as for fashion. For example, women may want to wear comfortable cotton or wool slacks and socks with sturdy leather shoes rather than nylon stockings, high heels, and a synthetic dress that all might melt to varying degrees in case of a fire. The natural fabrics would provide more fire protection. The change in apparel might also make it easier to exit the aircraft in case of an accident as well provide more protection in case the person had to walk home.

As you can see there are tradeoffs when deciding upon what type of clothing to wear and what type of equipment to carry on a flight. As we have pointed out, such things as your own personal requirements such as dressing to attending a business meeting upon arrival or going to a hunting lodge; or whether you are operating in a wet-cold or a dry-cold environment; the probability of getting wet; and the risk of fire are some of the factors you must consider when deciding on how to dress for a flight and what type of items to take for warmth and shelter.

Although anything is better than nothing, you can increase your survival chances and comfort level though proper planning and equipment selection. The goal is never to have to use any of the items, but it is better to be prepared and not need the equipment than to need it and not have it.

Some areas help you decide, such as Alaska and Canada, by requiring certain survival items be carried onboard flights. In the January-February 1992 *FAA Aviation News* article and later reprint on Flying to Alaska, we listed those requirements. Even if you are not required to carry such items, the article provides a good reference. Since the article is more than two years old, if you are planning to fly in those areas, you should check the current requirements for survival items. There may have been changes.

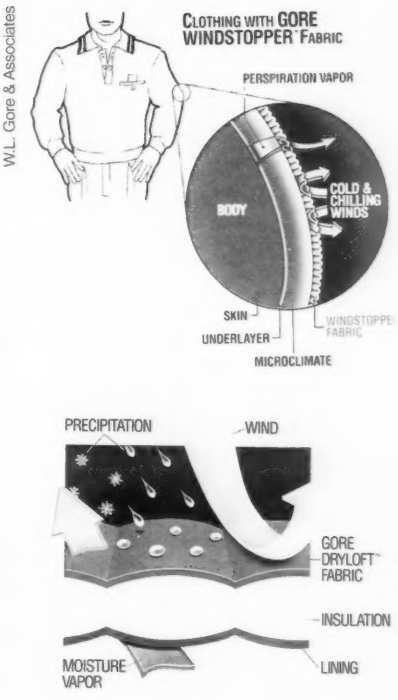
Although it is not a high-tech idea, it is important that everyone shopping for clothing be familiar with the layering concept. Simply stated, it is easier to keep warm when you are wearing multiple layers of clothing than when you are only wearing a single heavy item. The multiple layers trap more dead air space between your body and the exterior layer which keeps you warmer. Also, if you become warm, it is easier to remove a layer or layers to adjust your body temperature. With a heavy single layer, you don't have this option.

Today's recommended way to layer clothing is to wear an underlayer that is not water absorbing and is designed to wick perspiration away from your body. This wicking reduces the problem of perspiration wetting your clothing which can help make you cold. Then the second layer is your insulating layer consisting of one or more layers. This is your shirt, sweater, or vest for example. The third layer is your outer garment designed to protect you from the elements. This is your snow pants, parka, foul-weather gear, etc.

An important item in any environment is the proper headgear. Since the body can lose most of its heat through an unprotected head, in a survival situation, and a winter football game can be considered a surivival situation, warm, wind and waterproof headgear may be your most important survival tool.

Shopping for winter clothing designed for long periods out in a cold hostile environment can be both fun and a lesson in chemistry. Whether you are looking for warm survival type clothing and equipment to fly in, or things to go camping or hunting in, or just to play in the snow in can be confusing if you have not kept up with the newest fabrics and materials.

Today, you can buy various types of fabrics that breathe. Depending upon what type breathable material you buy, some use membranes with "zillions" of microscopic pores that are small



enough to block water droplets while letting water vapor pass through and other brands use special coatings to do the same thing, you can control the amount of moisture next to your body. Just be aware that there is always a balance between the amount of waterproofness such an item has and its breathability. The more of one, the less of the other. Combine this feature and its ability to be a windblock in a parka or outer shell garment, and you have a desirable outdoor garment. Provide the right amount of insulation and hood and you have your own personal one person survival shelter. ■

For more information about some of the new high-tech products available today, you can check the September 1994 Backpacker magazine. The issue has a good description and explanation of some of the high-tech products available including a glossary of high-tech terms and definitions used in today's outdoor market. The issue also has a detailed list of many of the manufacturers of such gear such as specialty outdoor stores LL Bean (800–341–4341) and Recreational Equipment Inc (REI) (800–426–4840). Both are good sources for high-tech outdoor clothing and equipment. Enjoy your search, just remember to consider all of your options and requirements and plan accordingly.

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COLD: A Deadly Killer

Throughout the article on winter survival, we have discussed the dangers of hypothermia as well as carbon monoxide poisoning. To determine how serious a problem these two issues are to airmen and people in general, we contacted the National Transportation Safety Board (NTSB) which referred us to the National Safety Council (NSC). For those not familiar with NSC, it is a non-governmental, not-for-profit public service organization that promotes safety. You may be familiar with its "Green Cross for Safety" logo.

According to NSC statistics published in its *Accident Facts*,1994 edition, deaths from "excessive cold" were 1,015 in 1989; 596 in 1990; and 588 in 1991. NSC breaks its data down into standardized categories based upon a numerical code shared by both governmental and non-governmental agencies. Aviation specific cold deaths are not tabulated.

Of the identified 588 cold-related deaths in 1991, 295 of those deaths were weather related. Of this total, the number of deaths by age group started to noticeably increase from 17 for the ages 25–29 to a peak of 37 for those 60–64. There was a small decrease in numbers, 17, for ages 65–69 followed by an increase to 20 for ages 70–74. That number increased to 26 for those 75–79 and to 25 for those 80–84. The numbers decrease after age 85. A significant number, 223, of those weather-related deaths were males. Only 72 were females.

Although a quick review of only one year's statistics may not be representative, and probably isn't, the point seems to be that cold-related weather deaths from all causes is primarily an adult problem, and it is primarily a male problem until the mid-70's when the number differences between male and female become smaller. Although this gender trend was taken from weather-related cold deaths, it is also applicable for the larger category of cold deaths. Of the 588 excessive-cold deaths in 1991, 398 males died compared to 190 females. Whether more males spend more time outdoors we don't know, but apparently more males put themselves at risk during cold weather than females. The by-age-categories for all cold deaths were similar to the weather-related statistics. The point is cold can kill those not protected, and those most at risk are the elderly and males.

Carbon Monoxide: A Silent Killer

A review of carbon monoxide (CO) deaths reported by NSC in its 1994 edition of *Accident Facts*, says the number of unintentional carbon monoxide deaths reported by death certificate as either being a contributing factor or an underlying cause has decreased for the period 1979–1988. During that period, 11,402 deaths were reported as unintentional out of a total of 56,133 reportable CO deaths. Suicide was the cause in more than 25,000 CO deaths. Fires were listed for more than 15,000, and no reason was listed for about 3,000 cases.

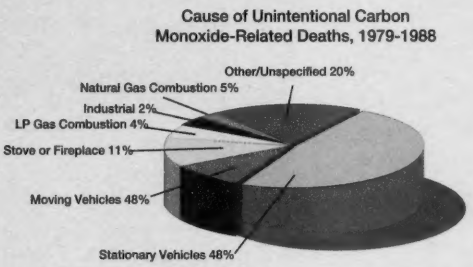
The report said 15 to 24 year olds were more at risk from unintentional CO deaths that any other group. But the report noted the death rates from age 15 to 74 were similar. Those under 15 had a lower rate, while those over 75 had a higher rate. The rate for males was more than three times that of females. The rate among blacks was about 20 percent higher than for whites. The report noted that CO unintentional deaths dropped from 1,513 in 1979 to 878 in 1988.

One explanation given for the drop in CO deaths during this period is since vehicles account for most of the unintentional CO deaths, stationary 48% and moving 10%, as the country reduces automobile emissions, including CO, through better and cleaner automobile designs, there has been a corresponding decrease in CO accidental deaths. NSC chart, Figure 1, shows the major causes of unintentional CO-related deaths for the period 1979–1988.

Figure 2 shows those areas of the country at the greatest risk from unintentional CO deaths based upon population. The areas are those parts of the country that normally have the coldest weather. Buildings and homes in those areas are also probably built the tightest to keep out the cold which makes them the most vulnerable to CO. As shown in Figure 1, stoves or fireplaces account for 11% of the specified unintentional CO deaths. The category is second only to vehicles as a cause of unintentional CO deaths.

The report also states that the CO-related death rate is four times greater in January than July. Although the reason is obvious, in the northern hemisphere, its colder in January than in July, we include the statistic only as a reminder that everyone; pilot, driver, homeowner, or anyone using a CO producing engine, stove, aircraft, or appliance needs to be particularly alert during the winter months. Although CO is deadly anytime of the year, the cold season is the deadliest period.

As this sidebar article on winter safety has tried to point out, although cold can be a killer, so can be a malfunctioning heating device used to fight the cold. Only through the proper use of any type of heater, can you use it to fight the other. Have a safe winter. ■



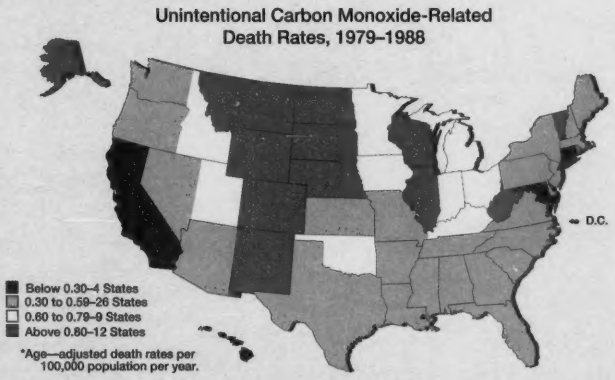

Unintentional Carbon Monoxide-Related Death Rates, 1979–1988
D.C.
Below 0.30–4 States
0.30 to 0.59–26 States
0.60 to 0.79–9 States
Above 0.80–12 States
*Age—adjusted death rates per 100,000 population per year.

Figure 1 (top) and Figure 2 (bottom)

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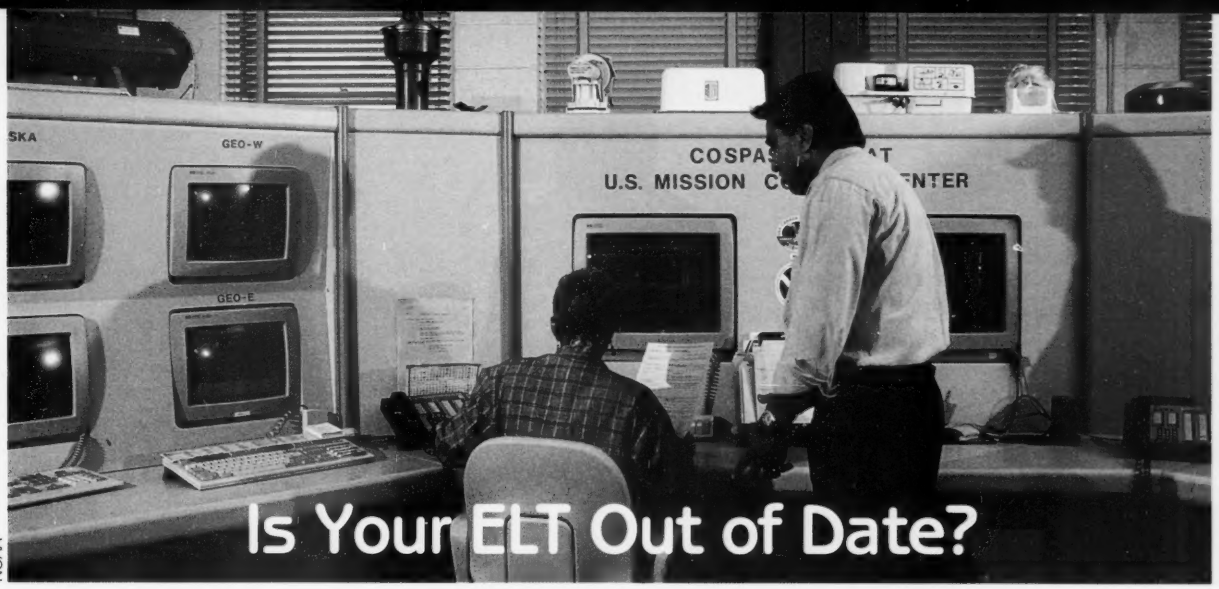


NOAA

Is Your ELT Out of Date?

by H. Dean Chamberlain, *Associate Editor*

Throughout this winter issue, we have discussed how to survive until help arrives. We briefly looked at how to dress for cold conditions, the dangers of hypothermia and carbon monoxide, and of the important role flight plans and travel plans play in search and rescue. Now we want to talk about an issue that may be somewhat controversial as well as futuristic to many—the next generation emergency locator transmitters.

Called Emergency Locator Transmitters (ELT's) aboard aircraft and Emergency Position Indicator Radio Beacons (EPIRB's) aboard ships and boats—including the smaller, Personal Locator Beacons (PLB's) made for people—they are all designed to transmit an electronic signal to alert national search and rescue (SAR) authorities that help is needed. The transmitted signal then provides the means for SAR groups to locate and home in on the signal to find the missing aircraft, boat, or person.

The main differences between the three types of devices are size, how they are activated, and frequencies used. ELT's are designed for impact activation and operate on the aviation frequencies of 121.5 MHz and 243 MHz. Shipboard EPIRB's normally are water activated, designed to float, and operate on 406 MHz and 121.5 MHz. Most ELT's and EPIRB's can also be manually activated. The small, personal PLB's are normally manually activated and operate on 406 MHz. They may or may not float depending upon construction.

ELT's

Required in aircraft since the 1970's as a result of a Congressional mandate, ELT's have been the source of debate as to their effectiveness. But because not all aircraft crash on an airport in front of witnesses, in a remote crash where the ELT does function, the ELT provides the best means of alerting SAR authorities of the emergency and helping them locate the crash site. In the case of an aircraft not on a flight plan, an ELT signal may be the first indication of a crash.

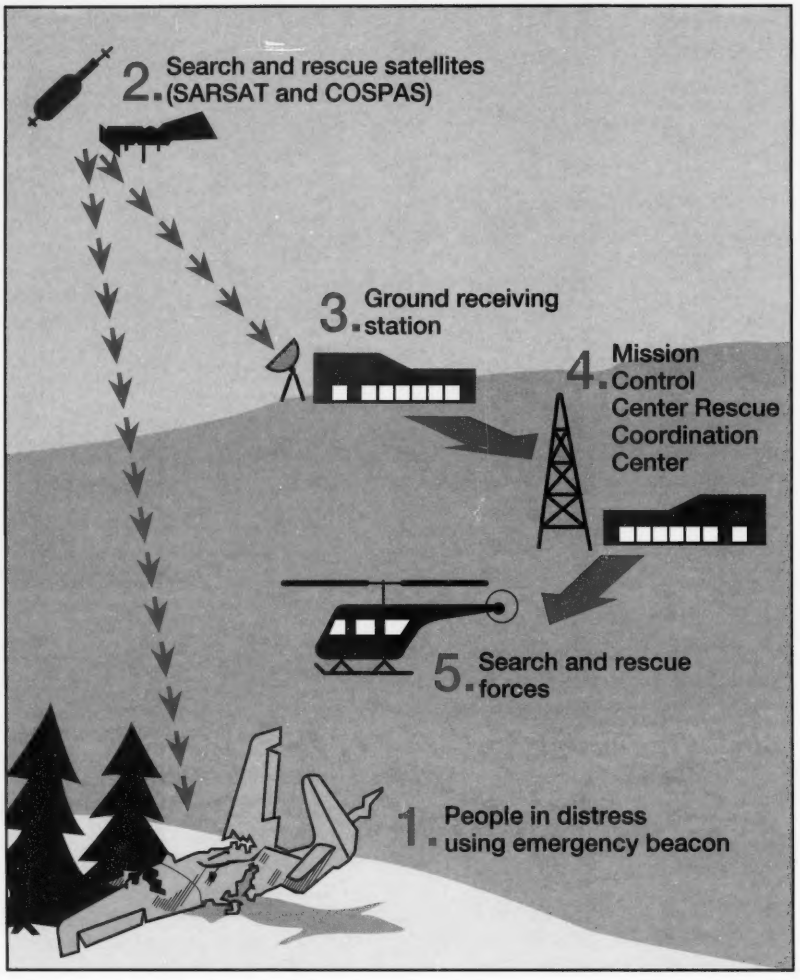
One problem with ELT's is that, like all electronic devices, they can and do occasionally fail in a severe crash, and they can and occasionally do activate under certain non-emergency conditions, such as a very hard landing. But a properly functioning ELT or EPIRB can be the fastest means of locating a remote crash site. And with today's satellite monitoring of the distress frequencies, alert times have been reduced dramatically.

The 121.5 MHz ELT's have saved many lives, but today's increased satellite monitoring and technology have developed a need for a different ELT. For example, although the use of satellites has increased the speed with which ELT signals are detected, all too often the detected signal is a false alert. The problem is the old 121.5 MHz ELT's currently installed in most of the general aviation fleet have a tendency to activate through either rough operations or handling.

Based upon annual U.S Air Force SAR reports, inadvertent, non-emergency activation of ELT's or EPIRB's consume hundreds if not thousands of hours of search time, and probably even more money and resources, each year as SAR organizations try to locate the wayward transmitters. Because until proven otherwise, each ELT alert must be assumed by SAR authorities to be an emergency.

ELT false alerts are caused by many different things. Pilots have been known to take their ELT's home with them and then inadvertently activate them. Then there is the proverbial ELT telling of a pilot's poor landing techniques. Each year countless SAR volunteers, local police, airport personnel, and others spend hours searching airports, hangars, repair shops, and other locations looking for inadvertent transmitting ELT's. In most cases, they find the activated ELT in a safely secured aircraft on the ramp or in a hangar. To prevent inadvertent activation of ELT's taken out of aircraft, A&P's and pilots should always remove the batteries from the ELT. Of course, the A&P then has to remember to reinstall the batteries when the ELT is put back into the aircraft. But that is another article.

The question is what can be done to alleviate this waste of valuable SAR


2. Search and rescue satellites (SARSAT and COSPAS)
3. Ground receiving station
4. Mission Control Center Rescue Coordination Center
5. Search and rescue forces
1. People in distress using emergency beacon

resources and the potential risk of life to SAR members while looking for an ELT in a hangar?

The FAA took a step towards solving the problem this summer when its new certification standard for 121.5 MHz ELT's became effective. The new standard provides for better activating mechanisms as well as other improvements designed to improve the transmitter as well as reduce the risk of inadvertent activation.

There may be a better solution for those willing to pay a little more for a lot more protection. One American company, E.I. du Pont de Nemours & Co. of Wilmington, DE, has done just that. And no, you don't have to be a du Pont to afford the solution. The company was the first to register a 406 MHz ELT in an aircraft with the National Oceanic and Atmospheric Administration (NOAA). The company is installing 10 of the new 406 MHz ELT's in its corporate aircraft.

406 MHz ELT's?

Why is this significant? Not only will the new 406 MHz ELT's provide for faster satellite alerting with better positioning information in the event of a du Pont aircraft accident than the old 121.5 MHz ELT's they are replacing, but the installation of the 406 MHz ELT's by du Pont was voluntary.

Although most aircraft are required by Federal Regulations to have an ELT on board, the FAA has not mandated the installation of the 406 MHz ELT's even though they are a better ELT.

So why is the 406 MHz ELT better? One reason is the 406 MHz ELT transmits a coded digital data signal that, if properly registered, provides the owner's personal identification including name, address, telephone number, country code, aircraft identification number, type, and color. This data allows NOAA's United States Mission Control Center (USMCC) located in Suitland, MD, to not only quickly locate a 406 MHz ELT signal to within one to three miles, but it also tells the USMCC whose signal it is.

It can do that because the U.S. Government requires U.S. owners of 406 MHz ELT's to register with the USMCC. The USMCC then appends this registration data to its alert message to SAR authorities. This identification information makes it easier for the SAR authorities to find and deactivate inadvertent 406 ELT activations as well as check on real alert signals. The SAR authorities can quickly call the registered owner and check on the status of the alert signal. If the aircraft is safe in its hangar, its ELT can be deactivated. If the aircraft is out flying, SAR efforts can be quickly activated.

This ability to identify and contact registered owners of 406 MHz ELT's has the potential to save SAR groups, as well as the FAA and other government agencies involved in aeronautical and maritime SAR, thousands of search hours and dollars spent looking for inadvertent ELT and EPIRB activations. In addition to saving SAR time and money, it also reduces the SAR risk for search participants by reducing the number of people sent out looking for ELT's transmitting in a non-emergency situation. The benefit of all of these savings is that in the event of a real SAR emergency, the resources will be available.

The 406 MHz System

Both the 121.5 MHz and 406 MHz ELT's use the COSPAS-SARSAT satellite system for alerting. COSPAS-SARSAT is an international SAR system that uses polar orbiting satellites to detect and locate ELT signals. According to NOAA, the COSPAS-SARSAT system uses NOAA environmental satellites and Russian navigational satel-

lites to receive the signals. The satellites then transmit the information to a ground station. Once a signal is received by one of the more than 35 international ground receiver stations, it is relayed to one of the 13 international Mission Control Centers. The Mission Control Center alerted then contacts the appropriate SAR authority.

The United States MCC coordinates input from 14 ground receiver stations in its network. Within the U.S. SAR system, the USMCC works with the Air Force and Coast Guard Rescue Coordination Centers which have primary SAR coordination responsibilities on land and sea respectively.

The benefit of the 406 MHz system is in how the satellites receive and relay the two types of distress signals. The 121.5 MHz-based system requires that both the ELT signal source and a ground receiving station be within satellite view of the receiving satellite at the same time. If a ground receiver station is not in view when a satellite receives a 121.5 MHz distress signal, the signal goes unreported until both the ELT site and a ground receiver site are in view of the satellite. This can result in significant delays in initiating SAR efforts, i.e., this process may take more than one satellite pass of the crash site before authorities are notified.

In the 406 MHz system, the receiving satellite does not have to be in view of both the ELT site and a ground receiver station. The satellite can store the 406 MHz signal until it passes over the first available ground station and then the satellite can download the signal data to the ground receiver station. This ability to store and then download a 406 MHz signal gives the 406 system a first satellite pass alerting capability that can reduce SAR alert times to within minutes of the emergency signal's activation. This reduced alert time capability is significant because in the SAR business, time often means the difference between life or death for accident survivors.

Benefits of the 406 MHz System

NOAA reports that the COSPAS-SARSAT system has saved nearly 4,000 lives since its first save in British Columbia, Canada, on Sept. 9, 1982. NOAA estimates that if every U.S. aircraft had a 406 MHz ELT on board, more than 90 lives could be saved in the U.S. each year. It also believes that the number of false alerts of the current 121.5 MHz ELT's could be reduced by at least 95 percent and that more than $7 million could be saved each year. These numbers do not include the reduced risk to SAR participants.

So why haven't pilots converted to 406 MHz ELT's? Probably because of two reasons. One may be resistance to change, especially if the government is involved. The other may be money. If the 406 MHz ELT is here now and it offers more safety, then why isn't it being used in more aircraft? Probably because at the moment, it is more expensive than the 121.5 MHz model. Manufacturing economy of scale may be a factor, or actually the lack of scale may be an important factor. Until more 406 MHz ELT's are purchased, (read made) their price will probably continue to be more than the current 121.5 MHz ELT's. But the price of 406 MHz ELT's should decrease through increased demand and its resulting competition.

The question in SAR and survival becomes one of trying to convince someone to spend money to prepare for an accident when that person believes he or she will not be in an accident. But the fact is on average about 2,000 general aviation pilots will be involved in some type of accident during any given year. The updated version of the 121.5 MHz ELT or the 406 MHz ELT could significantly improve the chances for survivors. The 406 MHz ELT is here, and it is authorized for use in aircraft.

Currently, most 406's are made for use on ships and boats, the technology is the same for use on boats or in aircraft. The major difference is in the packaging and activation method. But until there is more demand for 406 MHz aircraft ELT's, their price will remain several hundred dollars more than the current 121.5 MHz models.

Communicate with Air Traffic Control

As we have stressed throughout the years, an activated flight plan with flight service is one of the best means a pilot has of aiding his or her own rescue in the event of an accident. A distress call to air traffic control or flight service with a position report can activate the SAR process within minutes. This is why it is important for pilots in distress to communicate their plight to ATC for both assistance as well as alerting ATC to a potential problem.

Future Possibilities

So what does the future offer? Think about the possibility of a 406 MHz ELT transmitting not only its owner identification but also transmitting its location by using a GPS unit for positioning information to SAR forces nearly instantaneously. Currently the satellite receiving a 406 MHz signal determines the ELT's location through Doppler shift. But if you added either an internal ELT GPS receiver or connected an external GPS unit to the ELT to provide current aircraft position information to the 406 MHz ELT data signal so that at the moment of activation, the ELT transmits not only its owner and aircraft data, but it could also send its present position as well.

Think how fast a Mission Control Center could send SAR support to the crash site if it had the cash location identified within a matter of meters. Think of the number of lives that could possibly be saved through such a response. With such information, a victim's chances of a quick rescue could be extremely high.

Conversely, an inadvertently activated 406 MHz ELT would also be able to transmit its last known position to a MCC. The MCC would then provide the information to searchers to help find and turn the unit off.

According to NOAA, "A significant portion of the delay currently is due to the fact you have to wait for a satellite to pass over an active ELT. Depending

Revised FAR § 91.207, Emergency Locator Transmitters

On June 21, 1994, FAR § 91.207, Emergency Locator Transmitters, was amended again. For those who have not read FAR § 91.207 recently, two recent changes to the section established both an ELT inspection requirement as well as publishing the date after which TSO-C91 ELT's cannot be used in new installations. New ELT's installed after that date must meet the requirements in TSO-91a. The following is a reprint of the amended FAR.

FAR § 91.207, Emergency Locator Transmitters

(a) Except as provided in paragraphs (e) and (f) of this section, no person may operate a U.S.-registered civil airplane unless—
  (1) There is attached to the airplane an approved automatic type emergency locator transmitter that is in operable condition for the following operations, except that after June 21, 1995, an emergency locator transmitter that meets the requirements of TSO-C91 may not be used for new installations.
    i) Those operations governed by the supplemental air carrier and commercial operator rules of Parts 121 and 125;
    ii) Charter flights governed by the domestic and flag air carrier rules of Part 121 of this chapter; and
    iii) Operations governed by Part 135 of this chapter; or
  (2) For operations other than those specified in paragraph (a)(1) of this section, there must be attached to the airplane an approved personal type or an approved automatic type emergency locator transmitter that is in operable condition, except that after June 21, 1995, an emergency locator transmitter that meets the requirements of TSO-C91 may not be used for new installations.

(b) Each emergency locator transmitter required by paragraph (a) of this section must be attached to the airplane in such a manner that the probability of damage to the transmitter in the event of crash impact is minimized. Fixed and deployable automatic type transmitters must be attached to the airplane as far aft as practicable.

(c) Batteries used in the emergency locator transmitters required by paragraphs (a) and (b) of this section must be replaced (or recharged, if the battery is rechargeable)—
  (1) When the transmitter has been in use for more than 1 cumulative hour; or
  (2) When 50 percent of their useful life, (or, for rechargeable batteries, 50 percent of their useful life of charge) has expired, as established by the transmitter manufacturer under its approval.

The new expiration date for replacing (or recharging) the battery must be legibly marked on the outside of the transmitter and entered in the aircraft maintenance record. Paragraph (c)(2) of this section does not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals.

(d) Each emergency locator transmitter required by paragraph (a) of this section must be inspected within 12 calendar months after the last inspection for—
  (1) Proper installation;
  (2) Battery corrosion;
  (3) Operation of the controls and crash sensor; and
  (4) The presence of a sufficient signal radiated from its antenna.

(e) Notwithstanding paragraph (a) of this section, a person may—
  (1) Ferry a newly acquired airplane from the place where possession of it was taken to a place where the emergency locator transmitter is to be installed; and
  (2) Ferry an airplane with an inoperative emergency locator transmitter from a place where repairs or replacements cannot be made to a place where they can be made.

No person other than required crewmembers may be carried aboard an airplane being ferried under paragraph (e) of this section.

(f) Paragraph (a) of this section does not apply to—
  (1) Turbojet-powered aircraft;
  (2) Aircraft while engaged in scheduled flights by scheduled air carriers;
  (3) Aircraft while engaged in training operations conducted entirely within a 50-nautical mile radius of the airport from which such local flight operations began;
  (4) Aircraft while engaged in flight operations incident to design and testing;
  (5) New aircraft while engaged in flight operations incident to their manufacture, preparation, and delivery;
  (6) Aircraft while engaged in flight operations incident to the aerial application of chemicals and other substances for agricultural purposes;
  (7) Aircraft certificated by the Administrator for research and development purposes;
  (8) Aircraft while used for showing compliance with regulations, crew training, exhibition, air racing, or market surveys;
  (9) Aircraft equipped to carry not more than one person; and
  (10) An aircraft during any period for which the transmitter has been temporarily removed for inspection, repair, modification, or replacement, subject to the following:
    (i) No person may operate the aircraft unless the aircraft records contain an entry which includes the date of initial removal, the make, model, serial number, and reason for removing the transmitter, and a placard located in view of the pilot to show "ELT not installed."
    (ii) No person may operate the aircraft more than 90 days after the ELT is initially removed from the aircraft.

on the latitude you are at, this could take over an hour. But if a geostationary satellite could detect an ELT, the delay would be minimal since it views a hemisphere continuously. NOAA's current series of geostationary satellites, GOES, are equipped with a 406 MHz repeater that allows some ground stations to detect 406 MHz ELT's in near real-time.

"Because there is no relative motion between a geostationary satellite and an ELT, a Doppler location cannot be determined. Currently, this technology allows for near real-time alert notification, but no location. ELT's transmitting with GPS or some other navigational position information could provide near real-time alert notification and location."

The possibilities of an integrated 406 MHz ELT and GPS receiver are endless. The bottom line would be better service for those in an emergency situation while reducing false ELT alerts. This is the classic win-win situation.

Other futuristic SAR solutions might include satellite-based ATC aircraft tracking from takeoff to touchdown using GPS for continuous position reports or the use of automatic data link systems in GA aircraft for tracking and aircraft separation purposes. An interesting possibility is the use of satellite-based personal telephone monitoring systems for SAR. You or your aircraft could conceivably dial 911 for help after a crash. The call could automatically include your GPS-derived position if your aircraft was so equipped. The same could be done today using the rapidly expanding cellular telephone system with the right equipment.

The future is unlimited. As the computerization of our lives and the global communications capability continue to develop, eventually it will be possible to transmit information routinely and cheaply from every square meter on earth to anyone around the world. Today, as we rapidly approach that point, the only problem remaining to be solved is how to reduce the cost of that service, but usage will solve that. It may soon become impossible for someone to get lost or be out of communication range of help.

The best is yet to come. ■

IFR Mountain Flying—It Can Be Iffy

by Ken Hoffman

Part 3
Arrival Considerations

You have successfully planned your trip, you have executed a thoughtful departure, and you have not become lost en route. Now all we have to do is relax and bring it in, right? Well, you shouldn't do that much relaxing until you're in the chocks.

Statistically speaking, you are entering the realm where most accidents happen. As a matter of fact, 72% of the accidents occur between the top of descent and the landing.

In Parts 1 and 2, we offered some Rules of Thumb, or ROT for short. I would like to state ROT #7, for the third time:

ROT #7. *Don't run into anything.*

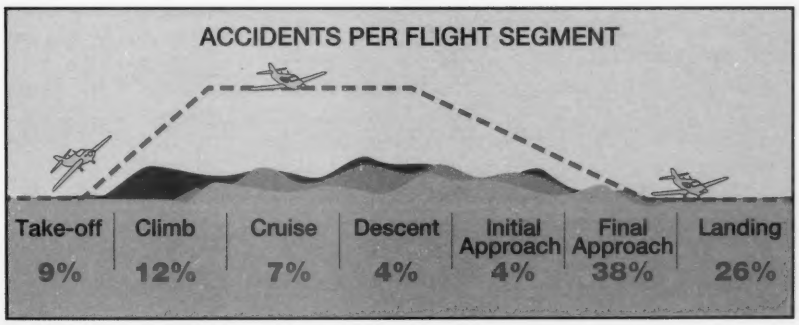
(Exception: Do run into the restroom before you depart. It's difficult to shoot an approach with your legs crossed and your eyes full of tears.)

Approach Planning

A successful approach begins by doing your homework before you ever take off. Planning for the arrival and approach should be carefully reviewed before beginning your descent.

It is very important to form a mental picture of the terrain surrounding the destination airport. A careful study of your VFR charts is essential. Mentally, if not physically, overlay the en route and approach charts over the VFR chart and carefully comply with all procedures and minimum altitudes. Do not rely only on Air Traffic Control to keep you from running into anything.

How well I remember when I was training for my instrument rating, more than 30 years ago. I was flying along proudly holding assigned heading and altitude perfectly when the controller said, "Radar service is terminated, proceed via your own navigation." I had no idea where I was. Boy, did I get a chewing out from my instructor.



So, even when you are being radar vectored, always be ready to "proceed via your own navigation."

Reiterating Some More ROT's with an Arrival Twist

ROT #9. *Allow for lots of extra time when flying mountain IFR.*

When weather conditions require an instrument approach into a mountain airport, you can expect some rather lengthy delays. Many of the missed approach procedures use the same NAVAIDS that the approach procedures use, and considering the terrain, many airports are one-at-a-time procedures. At Aspen, approaches are to runway 15 and departures are from 33. Therefore, it is common for approaches to be held up to allow for departures. Allow extra fuel for delays and have an alternative plan in mind.

ROT #12. *Stay Alert.*

You need maximum performance at a time when the day has been long and the rigors of the flight are making you tired. Give yourself a little pep talk. While flying long legs across the Pacific with my copilot Mark, I would say, "Okay, it's been a long day. Let's be extra alert, especially for dumb mistakes. Let's be very careful about all procedures. Take each item on the checklist one at a time. You watch me, and you can be sure I'll be watching you."

This really works. A major part in the solution of a physiological or a

psychological problem is the recognition that the problem exists so an appropriate compensation may be made.

ROT #14. *Keep up your energy.*

For your approach and landing, give the "ole blood" a shot of energy. In addition to the good long-term energy like fruit or juice, candy will serve nicely for the short term. I even like a shot of coffee or soda pop to raise my caffeine level. [Note: Blood sugar and energy can drop off rapidly after ingesting candy, so you may want to stick with fruit or complex carbohydrates. For those who are caffeine-sensitive, you may want to forego the coffee or soda pop.]

Arrival ROT's

ROT #17. *Don't descend until you know where you are.*

You may think that rule is obvious. Yet, there have been many accidents where pilots have descended into terrain because they were where they should not have been. The list includes the Canadair *Challenger* at Sun Valley, ID; airliners at Juneau, AL and Washington, DC; the MU-2 at Rifle, CO; the *Cheyenne* at Grand Junction, CO—the list goes on.

ROT #18. *Trust your navigation, but verify.*

As former President Reagan said of the Soviets when he negotiated disarmament treaties, "Trust, but verify."

Years ago, my friend Bob told me of flying the transition from Dunoir VOR to intercept the ILS runway 18 at Jackson Hole, WY. Catching the needle swing, he started his turn to intercept the localizer. Just as he started his descent, he noticed some erratic needle movement. Bob aborted his approach and went back to the VOR to try it again. This time he was careful to monitor the DME from Dunoir. As he flew the transition, he noticed the needle swing again but saw that he was not yet to the QUIRT intersection that is 11.9 DME from Dunoir.

Checking the *Airman's Information Manual* will show the newer ILS transmitters emit a signal that is accurate within a limited arc. That's a bit different from when I learned to fly IFR. In fact, we used to teach: "You can always tell which sector you are in by observing whether the CDI (course deviation indicator) is in the yellow or blue." NOT! That rule no longer applies, and you have to get in a pretty old airplane to see the yellow and blue arc on a CDI. If my friend Bob had not been alert for the anomalies, he would have descended into the high terrain instead of the Jackson Hole Valley.

Many of the approaches into mountain airports have unique features. Colorado's Aspen VOR-DME approach requires a descent from the initial approach fix altitude of 14,000 to the minimum descent altitude of 10,200, that is 2,385 feet above the airport. If you breakout right at the missed approach point, a circling maneuver is required to land. The missed approach is unlike any that I have seen anywhere, using an LDA (unique to Aspen) whose sole function is life in to provide guidance for the missed approach track. The Aspen procedure is an example of a procedure that deserves careful study long before you begin the approach.

Another example is the VOR-DME runway 36 approach to Jackson Hole that has six DME fixes on final approach.

Question: The Reno, NV, ILS runway 17 has associated with it two NDB's, a full ILS with DME, and a middle marker beacon. What are the minimums? The answer is: You may descend to 5,512 feet, that is 1,100 feet HAT (height above touchdown), and you must have four miles visibility. The reason is the 615-foot hill that is at the south end of the airport and in the missed approach path. Therefore, be sure you have the weather you need, both from a legal and a practical point of view, before you begin your approach.

The conditions that produce low ceilings and visibility may also be the same conditions that will provide an icing encounter. It wouldn't take much ice on most airplanes to take away that all-important get-away performance needed to successfully execute the missed approach procedure, such as the one at Eagle Airport (CO), where you may need to climb from your minimum descent altitude (MDA) of 9,140 feet to 14,500 feet in just a few miles. There are some pilots out there who have never flown at 14,500 feet.

Of concern are a number of accidents caused when the tail iced up, particularly among the commuters. The scenario is that the horizontal stabilizer collects a load of ice on approach; the pilot, however, is focusing on the wings' leading edges. When the pilot slows for the approach and extends the flaps, the tail suddenly "stalls." The aircraft noses in because the tail rises rapidly. So, as the military jocks say, "Watch your 6 o'clock." If you have a build-up of ice on the tail, consider maintaining your speed and landing with zero flaps.

On the other hand, an approach speed of 110 knots at Telluride may produce a true airspeed close to 130 knots. If you add a few knots for the gust factor, the kids, the in-law, and whatever, you are landing with a tail wind on a slick runway, and, oh yeah, your approach is a little high. You are setting yourself up for a dandy ride. I

Aviat Inc.

would not recommend going off either end of the Telluride runway.

A few years ago, a beautiful LearJet 25 from south of the border made an approach to the Eagle Airport. He came over the threshold a bit high, a bit fast, and touched down a bit long. Rocketing off the end of the runway created a major repair job for the shop.

Consider the poor soul who was flying the Cessna *Caravan* (the large single engine turboprop) on a contract for [an overnight mail carrier] at night from Aspen to Denver. He entered the clouds at approximately 10,000 feet, advancing toward Runway 36 straight ahead. Although he had all of the de-ice and anti-ice equipment available and the airplane was certified for flight into known icing conditions, he picked up so much ice on approach that he couldn't make it to the runway. Incidentally, the pilots ahead of him were giving very scary PIREP's after they landed, but we could find no evidence on the tapes of the reports being passed on to this *Caravan* pilot.

ROT #19. *Thou shalt not bust thine minimums.*

From time to time, I have had pilots ask me to get them into Aspen. I explained to a Jet Star pilot that I would be happy to fly along and help. However, I said that the pilot should understand that I would only be helping to fly the prescribed procedure; there would be no magic, and there would be no scud running up the valley. We tried, but we were not successful. The boss seemed to be satisfied that our lack of success was not due to a lack of skill or courage on the part of the pilot.

ROT #20. Have fun.

Sometimes I worry when I write an article like this that I may be scaring people away. I hope not. Then again, maybe some people should be scared away. But it is important to have fun. Successful completion of a mission where you call on your long-developed skills, where your trusty craft delivers brochure performance, where passengers look at you in awe and say, "Great flight!" That is what pilots live for and seek.

One last story. Some time ago [a friend] and I were returning to Colorado from a multi-legged flight. [My friend's] spouse was along. We were flying the LearJet 25D at flight level 450, trying to top the strong westerly winds. We were doing goofy things and chuckling about this and that to pass the time when the spouse leaned forward and said, "Pilots are easily entertained."

That's true. And we are entertained in strange ways. ■

Mr. Hoffman is the owner of TechniFlite, an advanced pilot training facility located at Centennial Airport in Colorado. He is a 17,000-hour pilot with all the ratings in the world. He says that if you would like to share your story about IFR flying in the mountains, curse his "distortion of facts," or simply have questions, contact him at TechniFlite at (303) 792–9720. Babette André of Wings West *magazine has graciously given us permission to reprint this series, which appeared in the Fall 1993, January/February 1994, and April 1994 issues of* Wings West.

Is Flight Standards Giving Lip Service to Partnership?

Continued from page 1

The General Aviation and Commercial Division of Flight Standards developed the General Aviation Action Plan (GAAP), which was designed to revitalize general aviation. There are five goals that look for alternatives to regulation and stimulate general aviation. Eleven industry representatives from the major "alphabet" groups that have general aviation interests formed a "support group," the GAAP Coalition. The Coalition serves as an ad hoc advisory group to the FAA Administrator. If there is an issue that needs regulation, they will act as unofficial advisors. Again, industry is part of the process.

These examples are proof that we are starting to see more than just discussion—but implementation based on partnership. One fear that I have heard on both the government and industry's side is the perception by others that the FAA is a puppet of industry or "in bed" with industry. They see that as negative, but the answer should be, "Yes, we are in bed together on the safety issue!" Flight Standards' and industry's goals are the same—Number One is Safety, and Number Two is Economics—but never Economics in lieu of safety.

Safety statistics have been improving steadily over the years for the industry as a whole. These improvements are NOT just luck. They say that your partnership in safety is working. Partnership is the key to compliance, and that is what we need—compliance. Compliance means prevention. It makes a lot more sense to prevent tragedies than to have to learn from them.

Flight Standards is deploying what it has been talking about at the highest levels. Now, let's take that attitude down through the work force on both sides and complete the chain. ■

Ms. Tavlin is a domestic and international communication specialist and the proprietor of Tavlin Training. She works with both industry and the FAA and other government agencies on special projects and training issues. Ms. Tavlin provided this article simultaneously to several publications. We have published exerpts of what she provided us.

Flight Crews Should Monitor Cholesterol Levels Closely

by Dr. Stanley R. Mohler, M.D.

Poor diet and life-style choices lead to cardiovascular disease, a major threat to aeromedical certification

The holidays are upon us, a time when we all generally forego any diet regimes or healthy eating habits. All those rich foods may be wrecking havoc with our arteries and could be leading to problems down the road which could result in losing medical certification. A nutritionist once told me that the average Thanksgiving dinner contains 27 grams of fat, which she emphasized by filling a dinner plate with 27 tablespoons of shortening. It's quite an image to keep in mind when you pull up to the well-laden holiday table. Dr. Mohler takes the scientific approach. Read on.—Editor

High cholesterol can lead to cardiovascular disease and other ailments that threaten aeromedical certification. A variety of prescription medicines and substances can help lower serum cholesterol to avoid the high-risk levels that can lead to cardiovascular disease. Many health authorities believe that a diet that limits the use of egg yolks, butter, and fatty foods can also reduce the risk of cardiovascular disease.

If an individual's serum cholesterol level exceeds 200 milligrams (mg)/deciliter, an active serum cholesterol reduction program should be considered. Such a program might include dietary changes, more regular exercise, and weight control. Exercise and weight control are generally recommended for everyone, but they should be especially high priorities for people at higher risk for developing heart and blood vessel disease. If a low-fat, low cholesterol diet, exercise, and weight control are not effective, medication may be necessary.

Life-long serum cholesterol levels should be kept below 200 mg. Adult arteries generally operate in the 90–130 millimeters (mm) of mercury ranges (mean pressure). When at rest, the adult arterial "systolic" pressure (the peak pressure per heart contraction) generally is within the 110–130 mm range, with the accompanying "diastolic" (or lower) pressure before the next heart contraction in the 70–82 mm range. [Systolic measurement refers to pressure when the heart is pumping; diastolic measurement refers to pressure when the heart is at rest.]

The upper ranges of mean pressure occur temporarily during exercise and are a healthy response to demands on the cardiovascular system. During vigorous exercise, the systolic pressure upper level can rise in a healthy person to 180 or higher depending on the level of exertion. The diastolic pressure can reach 120 or higher under these circumstances. Pulse rates (ideally in the high 50's to high 60's per minute while at rest) can rise to 150 or more, depending on the exercise and the fitness of the individual. These temporary, increased pulse rates and pressure are considered normal physiologic responses to exercise and are part of the healthy conditioning process accompanying regular exercise.

Continuous high average resting blood pressures (in contrast to those occurring during exercise) produce a sustained loading on the arteries and heart over time and promote blood fat particle deposits (of which cholesterol is a predominant component) in the flexible semiporous inner arterial wall. The fatty deposits are known as "atherosclerosis," a condition noted by the ancient Greeks and named after their word for "porridge," which the deposits resemble. The increasing build-up of fat (lipids) will ultimately create a loss of artery wall flexibility and will narrow the cross-sectional area of the affected artery. Sustained increased at-rest blood pressures (hypertension) dramatically increase the build-up of these fats over a period of time. The deposited fats will gradually narrow the inner artery surface in contact with blood and will progressively close the arterial opening, inhibiting an adequate flow of blood. Tobacco smoking also damages the inner arterial wall lining, further promoting atherosclerosis.

This process of arterial damage by atherosclerosis is a major factor in more than 60% of the deaths in the U.S. These atherosclerotic changes are the

major causes of heart attacks and strokes. Thus, preventing and reducing atherosclerosis are priorities for anyone seeking a healthier, longer life and for pilots seeking a career with continuing aeromedical certification. Fortunately, accomplishing atherosclerotic prevention and reduction measures can be achieved by adopting a healthy lifestyle and by taking specific cholesterol lowering substances and medications when necessary. These measures can be beneficial at all ages. Figure 1 shows a general form for a laboratory report of blood lipid levels, along with typically given ranges for normal levels.

Substances that inhibit the assembling of excessive cholesterol in the liver by metabolism include:

• ***Lipoprotein Inhibitors.***

Gemfibrozil is a prescription drug that is known to decrease serum cholesterol levels and to decrease very low-density lipoprotein in serum. These very low-density lipoproteins carry fat and cholesterol into the arterial walls, producing atherosclerosis. The drug may also decrease fatty acid levels. In addition, some reports have found that the drug may increase levels of high-density lipoprotein, a beneficial result. High-density lipoproteins carry deposited fats away from their arterial wall deposition sites.

• ***Anti Low-Density Lipoprotein Medication.***

The prescription drug Probucol enhances the removal of serum low-density lipoprotein from arterial walls. Thus, the adverse effect of low-density lipoprotein deposits is diminished to a significant degree.

• ***Niacin (nicotonic acid).***

This substance has a cholesterol lowering effect. (The low-density lipoprotein cholesterol is lowered.) It has been observed that high density lipoproteins may increase in people taking the substance, a potential benefit noted above. Very low-density lipoprotein synthesis is also decreased.

• ***Cholesterol Lowering Resins.***

Substances known as "bile acid binding chemicals," referred to as "resins," can lower the total cholesterol level, mainly through diminishing the low-density lipoproteins. These also increase the liver "receptors" that pull low-density lipoproteins from the circulating blood, lowering their circulating level.

• ***Ethyl Alcohol.***

A recent study reported that one to two alcoholic drinks a day appeared to raise high-density lipoprotein levels in the serum.

Typical Laboratory Serum Cholesterol and Lipid Listing

Chemical Screen	Unit of Measure	Reference	Range
Cholesterol	milligrams/deciliter	(mg/dl)	*
Cholesterol percentile		Percentile	*
Triglycerides		mg/dl	50–250
High-density Lipoprotein	(HDL) Cholesterol	mg/dl	*
Low-density Lipoprotein	(LDL) Cholesterol	mg/dl	*

* Cutoff Values Recommended by the U.S. National Cholesterol Education Program

	Desirable	Borderline	Higher Risk
Cholesterol	Less than 200	200–239	240 or greater
HDL Cholesterol	Greater than 35	35	Less than 35
LDL Cholesterol	Less than 130	130–159	160 or greater

Source: Dr. Stanley R. Mohler

Figure 1

Despite the publicity this [latter study] received, it is important to note that the above study was based on questionnaires of 680 persons, half of whom had previously had heart attacks. Some laboratory data were collected on each participant. There was a suggestion that high-density lipoproteins increased somewhat in those who reported consuming one or two alcoholic drinks a day within the study group and that there were fewer future heart attacks in those who reported this moderate alcohol consumption.

But the many adverse effects of a mind-altering, habituating and addicting toxic substance, such as ethyl alcohol, cannot be overlooked simply because a study, based fundamentally on self-reported alcohol intake, seems to have indicated that a change in one category of serum lipids might of itself be beneficial to the health of the heart and blood vessels. This lipid change finding must be viewed in perspective with the many other changes alcohol produces that are detrimental to heart muscle, arteries, liver, and other organs, including changes in the brain that can affect behavior and coordination. These symptoms include diminished simulator performance and increased risk of hemorrhagic stroke in those who regularly consume alcohol.

Air crew can take positive nutritional and life-style steps to minimize the risks of developing cardiovascular disease. Medications are available from physicians for those who may need additional help in lowering serum cholesterol to safe levels. The long-term benefit can be avoidance of cardiovascular disease, enhanced quality of life, and continued aeromedical certification. ■

Dr. Mohler was director of the precursor of FAA's Civil Aeromedical Institute for five years and chief of the Aeromedical Applications Division for FAA for 13 years. He is now a professor and departmental vice chairman at Wright State University School of Medicine in Dayton, OH, where he is also director of aerospace medicine. He is an airline transport pilot and certified flight instructor. This article originally appeared in the Flight Safety Foundation's Human Factors and Aviation Medicine, March/April 1994.

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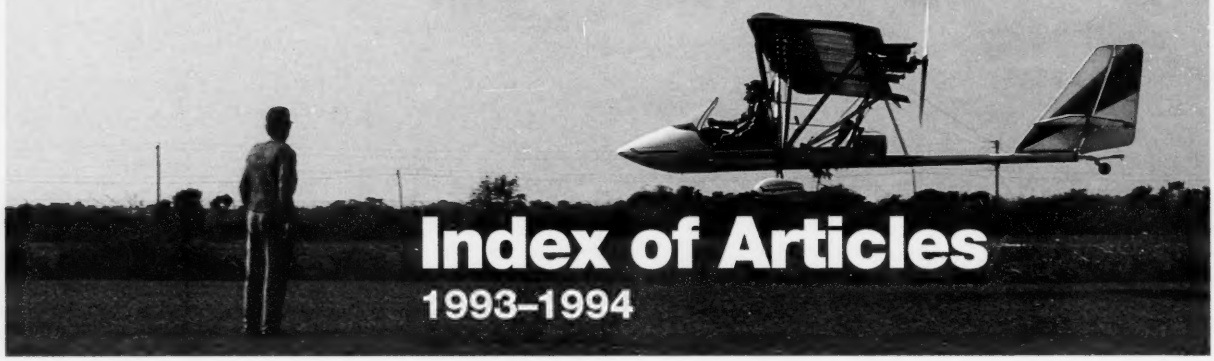

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Special Series: **FAA AND EDUCATION**

Sky's the Goal at KSU's Aero Department

by Kay Garrett

When the Kansas College of Technology in Salina formally merged with Kansas State University in 1991, it became the ninth "K-State" College. As a result, K-State Salina students now can earn four-year degrees in mechanical and electronic engineering technology. Its aeronautical technology students can earn an airframe and powerplant certificate, an associate of applied science degree in aviation maintenance or avionics, and the associate of technology in aviation maintenance technology and in professional pilot.

As the first land-grant university in the nation, with a large graduate school and multi-million dollar research programs, KSU sought the highest accreditation for the aero programs. Today, its flight training program is a FAR Part 141-approved school, and the aircraft maintenance program is certificated under FAR Part 147, Aviation Maintenance Technician School.

The aeronautical department also has the distinction of being the only location outside the United Kingdom to have Civil Aviation Authority (CAA) approval and to be the only school in the world with both American FAA and UK CAA approvals for training and licensing pilots. Five KSU-Salina instructors hold both FAA and CAA certification.

In 1993, the school received a $7.7 million grant from the Department of Defense, enabling the school to purchase a fleet of new Beech aircraft: *Sundowners, Bonanzas, Barons,* and a *King Air*. The grant also helped purchase single, multiengine, and turbine engine flight simulators, lab equipment for the aviation maintenance program, and $428,000 worth of state-of-the-art diagnostic equipment and special tools for the avionics labs.

Ken Barnard, head of the aeronautical department, talked about the thriving aviation program, "In five years we've gone from having a few aircraft and some WWII hangars to owning a standardized fleet of 54 planes—including 11 new and 13 fully refurbished, used planes, an aerobatic *Bonanza* and a helicopter—housed in two 27,000 square-foot hangars. And we're training in a new, $1.5 million, 36,000 square-foot aeronautical technology center outfitted with the latest equipment."

Last fall, the aeronautical department enrolled 120 students, including six women: 56 in flight, 54 in maintenance, 10 in avionics. The programs have the capacity to grow to 250-300 students.

A realistic attitude shapes all the K-State aero programs. Barnard noted, "We're striving to train students so they're completely familiar with what the airlines will expect of them as professionals when they're on the job."

Airframe and powerplant maintenance students hone their skills on airworthy airplanes and learn that lives depend on how well they do their work. "We have a strict policy: You fly in the aircraft you've worked on when the job's completed," Barnard said.

"We expect students to think and act like professionals," he continued. "They fill out complete weight and balance sheets, flight logs, and record airspeed limitations for the aircraft. The A/P students fill out shop work orders routinely so it becomes second nature. Our goal is to make their experiences in school as realistic as we can."

That air of professionalism permeates the aeronautical technology center where the aeronautical students are seen in uniforms for classes. Professional pilot students wear a blue shirt, navy tie, and slacks and earn epaulets and bars as they acquire various ratings. The airframe and powerplant maintenance students chose khaki shirts and jeans, and avionics students elected to wear gray shirts with jeans.

"Airline executives and corporate leaders alike have remarked on the importance of this professional appearance for the students," Barnard added.

Running a tight ship benefits students in other ways. Because of the FAR Part 141 certification, aeronautical students acquire certificates and ratings within a specified time much lower than the national average; for example, a minimum of 30 hours total time rather than 40 hours required by FAR Part 61 for a private pilot. "FAA has long recognized that training can be done at an accelerated pace when it takes place

in a disciplined, standardized environment," Barnard noted.

Students also benefit by receiving training on single engine, multiengine, and turbine engine simulators, "where you can shut down engines, do maximum performance maneuvers and fail components," he adds.

Beginning students fly Cessna 150's. For commercial instrument training, they move up to the Beech *Sundowners*. For complex time, variable speed prop, they go into *Bonanza's* and into the *Baron's* for multiengine work. For propjets, they finally go into the *King Air*. The fleet is standardized in appearance and outfitting and includes EFIS in the *Baron* and *King Air*.

Many scholarships are available, and training opportunities are being added all the time. Two recent internships with local companies now will let students fly the jump seat, space available, on corporate jet aircraft to observe procedures, techniques, and gain some cross-country experience. When KSU uses the *King Air* for transportation needs, the advanced students can fly the right seat to build turboprop time.

Said Barnard, "We're so new, however, that even in Kansas, many people are not aware of what we're offering." Ironically, the program is becoming well-known thousands of miles beyond Kansas. When Chris Long of British Aerospace was sent to find a base for airline pilot training, he checked out France and Spain and researched several U.S. flight training schools before he decided to train the pilots at KSU-Salina's aeronautical department.

"We picked Salina for several reasons," Long said, "not the least of which are the facilities, classes, and aircraft. We found that Kansas offers uncluttered airspace, good weather, and a comfortable living environment that features a low crime rate and low drug threat." Long explained that international airlines select and hire personnel who then are trained to become pilots. British Aerospace Flying College Limited at Prestwick, Scotland trains pilots for British Airways and several other airlines. "We need a fair weather base for the beginning pilots," Long said, "and Prestwick will be filled to capacity when the recession ends so we needed to get a program started elsewhere."

KSU

Six students from British Aerospace Flying College began their training in January, and a second class started in April. This marks the second time the aeronautical program has landed international pilot training program. Five years ago, KSU trained four classes that brought students from Africa, Europe, the Middle East, and Asia.

Barnard hopes that in the near future, KSU's aeronautical department can serve as a conduit to regional airlines. As pilots retire from the major airlines in the next 10 years, regional airlines will become the primary suppliers of replacement pilots. "I'd like the department to be tied in with training students who are heading directly for the airline industry," he said. The goal is to have the regional airlines employ students right out of the university. The program will need to use the same criteria the regionals want with their quality and standardization. "The students will need to learn the checklists and procedures the airlines use and get the experience they need to be a viable employee," he said. "I think such a progression from university to regional airline would give the whole industry a more stable environment and give students a light at the end of the tunnel. And, I think a student would be more than willing to fly for the regional airlines for five years or more if he or she knew eventually they would be considered as prime candidates for a position with a major airline."

KSU

Peter Kennedy with two British Aerospace students (top). ATC piston twin simulator (bottom).

As a major research university, K-State also is able to offer its aeronautical students opportunities to learn about new technologies first hand. For example, they will be learning a new paint stripping method being developed by industry. In cooperative projects with the University of Kansas and Wichita State University, the KSU-Salina students will work on methods of repairing new composite materials, and when new interior panels are created with experimental molding techniques, the panels are installed and tested in the fleet.

In addition to its FAR Part 141 certification and its work with FAA's Aviation Safety Program (formerly the Accident Prevention Program), K-State also has another FAA connection. Both FAA Deputy Administrator Linda Hall Daschle and Aviation Safety Program Manager Roger M. Baker are K-State Alumni. ■

Ms. Garrett is Associate News Director for KSU. For information on the aeronautical program at KSU, contact Ken Barnard at (913) 826-2679

• Kudo's for the Old Cap'n

I say the Old Cap'n is an excellent article on common sense in aviation. Unfortunately, all too often we get caught up in what we're doing and don't really ***think*** *about what we are doing. The Cap'n reminds us to use our common sense. I am not a pilot but plan to get my private rating soon—really! No matter where you fit into the aviation system, you can learn a thing or two from the Cap'n.*

Andrew M. Holesko
Liverpool, NY

When we started the Old Cap'n series we asked for comments on whether it should be a continuing feature. The results are in, and it's good news for the Cap'n. You'll be seeing him regularly on these pages. If you have incidents or occurrences you would like to have the Old Cap'n comment on, please send them to his kindly ghost writer, Safety Program Manager Richard D. Hague, FAA, 4955 E. Anderson, Suite 110, Fresno, CA 93727; or call him at (209) 487–5306.

• Submitted for Your Information

In reference to the article on the U.S. Parachute Association in the January/February 1994 issue of FAA Aviation News, I would like to make a point. With regard to safety, I was concerned about the lack of discussion of the issue of parachute jumping within the confines of an airport traffic pattern at non-towered airports.

Safety *and* ***parachute jumping*** *within the confines of an airport traffic pattern at non-towered airports are contradictory terms.*

Aside from all the radio communications procedures listed in FAR Part 105, the "few helpful hints for being an informed occupant" listed in the article should have addressed the following questions.

If you are parachute jumping within the confines of an airport traffic pattern at a non-towered airport:

1. *Will there be aircraft in the pattern with no radios?*
   Answer: *Probably.*
2. *With or without radios, will the pilot of this horizontal traffic be able to look through the ceiling of their aircraft to look for vertical traffic?*
   Answer: *No.*
3. *Will there be aircraft above the traffic pattern with no radios?*
   Answer: *Probably.*
4. *Is it possible for a non-powered parachute to drift into the airport traffic pattern and/or instrument approach?*
   Answer: *Yes.*

The list goes on. So do the questions. Currently, the only solution for pilots to block such activities at local airports is to sign petitions and present them to the airport owners. The FAA leaves the approval of parachuting activities in the hands of the individual airport owner. Instead of a safety standard, the issue of parachute jumping at non-towered airports becomes a political issue.

The article was entirely self-serving to the U.S. Parachute Association. I would like to see input from other pilots who strongly oppose parachute jumping at non-towered airports. It is a safety issue which needs to be addressed.

Cheryl Mackie
Merrimac, WI

We'd like to address your questions first. Number one: Having no radios does not exempt the pilot from exercising his or her regulatory requirement to see and avoid other aircraft—and a fully deployed and properly functioning parachute would be considered just that. Number two: Pilots can't look through the ceiling, but they can move their heads, and they can maneuver the airplane to enhance the visibility of a blocked section of airspace. Number three: See the answer to number one. Number four: Yes, it's possible, but if the parachutist is not 2,000 feet above the airport's traffic pattern altitude, he or she may be in violation of FAR § 105.17, and in any case, the parachutist cannot enter the Class D or E instrument approach path unless he or she has an authorization from the air traffic control facility which controls the airspace (who would, in turn, route traffic away from the area).

Parachute jumping is considered a sport activity, regulated by FAA only in the areas where it might conflict with aircraft operations. This regulation is FAR Part 105. Section 105.17 states that—

> "Unless prior approval has been given by the airport management, no person may make a parachute jump, and no pilot in command of an aircraft may allow a parachute jump to be made from that aircraft
>
> "(a) Over an airport that does not have a functioning control tower operated by the United States; or
>
> "(b) Onto any airport.
>
> "However, a parachutist may drift over that airport with a fully deployed and properly functioning parachute if he or she is at least 2,000 feet above that airport's traffic pattern, and avoids creating a hazard to air traffic or to persons and property on the ground."

Most parachute jumps are made onto areas near non-towered airports, and the safety record is favorable—mostly because of the partnership between the U.S. Parachute Association and the FAA. A thorough read of FAR Part 105 will indicate that the sport is well-regulated for the safety of other aircraft and persons on the ground.

But pilots need to remember that if on your charts you see the parachute symbol near an airport or if in the *Airport/Facility Directory* you see remarks about parachute activity, it's both the pilots' and parachutists' responsibility to see and avoid.

FAA AVIATION NEWS welcomes comments from its readers. We may edit letters for style and/or length. We will select a representative letter from those on the same topic for publication, and because of our publishing schedule, responses may not appear for several issues. We will not print anonymous letters, but we will withhold names or send personal replies upon request. Address: Editor, FAA AVIATION NEWS, AFS–810, Washington, DC 20591. FAX (202) 267–9463.

• ASOS & AWOS Observations

I find the FAA Aviation News one of the few magazines I read immediately upon receipt. The information is always pertinent. But while decoding the "KEY TO MANUAL AVIATION WEATHER OBSERVATIONS" and comparing my efforts with the printed decoding I found a disparity.

I decoded the "SKY CONDITION AND CEILING" as 1,500 feet scattered, measured 1,500 feet overcast. The "measured at 1,500 feet" seemed odd. Then I read the published decoding, "measured 2,500 feet," which seemed more expected in this kind of report. Which is correct?

Ken Dyda
Rancho Palos Verdes, CA

The "measured 2,500 feet" is correct. We have contacted NOAA, who publishes the key, and made them aware of the typo.

• Getting your A & P

As an FAA certificated A&P technician, a USAF-Retired Aircraft Maintenance Officer, a Director of Technical Training for an Aviation Maintenance Technician School (AMTS), and a General Manager for two FAA approved aircraft repair stations, I would like to respond to Mr. Power-Waters comments on "How to get your A&P" which appeared in the "Flight Forum" of your January-February 1994 issue.

The methods of obtaining Airframe and Powerplant (A&P) certification (military aviation experience, civil aviation experience, and AMTS graduates) all require instruction and practical working experience and are equally demanding. As the editor points out, the aviation experience requirement for applicants (military or civilian) to qualify to take their FAA A&P written exams is 30 months for both ratings or 18 months for one.

To meet these experience requirements, the military A&P applicant has probably attended a lengthy technical training school (several months), attended a specialty training course (again—up to several months), received continuous on-the-job training, and underwent a skill-level upgrade training program throughout their term of enlistment—and each of these processes does involve written and practical examinations! The civil aviation A&P applicant also goes through a lengthy period of training (18+ months) with their employer, and has training records reflecting on-the-job as well as specialty supplemental training courses taken. An employer will normally furnish proof of training as a listing or certificates of training.

Upon furnishing the FAA Safety Inspector with proof of training and experience, the military or civil aviation A&P applicant could qualify to take the three FAA A&P written exams (both ratings) or two exams (single rating). After successfully passing the FAA written examinations, these applicants go through the same FAA Oral and Practical (O&P) examination process that the AMTS graduate does.

Federal Aviation Regulation Part 147 requires AMTS's to provide students a minimum of 1,900 hours of curriculum for the combined A&P rating. This hours requirement equates to 12 months training if compared to the 30-month experience requirement for civil and military A&P applicants seeking the combined rating. With the increasing complexity of aircraft systems inexperienced student technicians need to spend more classroom time understanding the theory and fundamentals of basic aircraft systems. The FAA has updated the appropriate skill levels required to be taught throughout the A&P curriculum and there is increased emphasis on "hands-on" (level 2 or 3) activity for certain subject areas. By the time an AMTS student progresses to the end of their A&P program (12 + months), it is necessary to test the students retention of subject areas taught in earlier classes; the civil and military aviation A&P applicants have been exposed to these subject areas more frequently and currently throughout their more lengthy job training efforts. Hopefully, an AMTS student won't only be memorizing the answers to questions that could be part of an FAA written exam; a student that has received the required A&P curriculum through lecture, demonstration, discussion, and practical application along with a question and answer review, should be able to successfully pass the FAA A&P written and oral and practical examinations.

Becoming an FAA certificated A&P technician is not an easy task! Our aviation industry demands skilled and competent technicians regardless of their training origin, and if the "selection" process seems difficult for some to become part of my A&P profession—great! Keep up the good work FAA!!

Bill Ellis
Oakland, CA

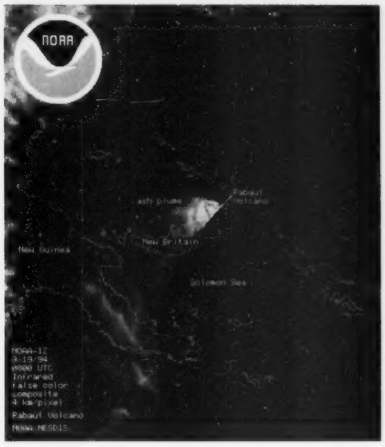
InstrumentCORNER

• IAP Profile Symbols

The legend page explaining profile views in the IAP book (page H1) states, under the heading of "Profile Symbols" that "Unless otherwise indicated the non-precision final approach altitude is to be maintained until the next fix." How can this be so, when, according to the AIM, the final approach commences at the FAF?

Cyril Toker
Ponte Vedra Beach, FL

Each final approach segment has a published altitude or altitudes that a pilot must comply with unless ATC authorizes otherwise. In the case of a non-precision approach, the published IFR altitude for the final approach segment is the minimum descent altitude (MDA). If an intermediate step-down fix altitude is listed, it governs until passage. The MDA is the minimum altitude that can be flown on the final approach segment until the pilot is in a position to land in accordance with FAR § 91.175 or the missed approach point (MAP) fix is reached. FAR § 91.175, Take-off and landing under IFR, applies.



Do You Know?

What starts with a bang, flies high, is hard to see on radar, and can stop four B747 jet engines?

If you guessed volcanic ash, you're right. This National Oceanic and Atmospheric Administration (NOAA) photograph shows the ash plume of the Rabaul Volcano on New Britain Island, Papua New Guinea after its September 19,1994, eruption. Taken by a NOAA satellite, the false-color infrared photograph shows the extent of the dispersion of the volcanic ash. Pilots flying in and through that area should be aware of the dangers of volcanic ash. According to NOAA, satellite observations indicated that the ash plume was blowing west at about 60 knots, at an altitude of at least 70,000 feet.

Although few U.S. non-international airline pilots would be flying in the area, this photograph shows the wide-spread potential risk area that volcanic ash poses for aviators from ground level to the upper atmosphere. Although we hear of more volcanic eruptions outside of the continental U.S., the continental U.S. is not without risk. The Mount St. Helen blowout and the damage to aircraft downwind of the famous Northwest explosion is a good example that the U.S. risks are real.

Paragraph 7-86 of the *Airman's Information Manual* (AIM) publishes information on flight operations in volcanic ash. The paragraph discusses what to do if you inadvertently enter a volcanic ash cloud as well as the dangers of such flight. One B747-200 lost all four engines after flying into a volcanic ash cloud. The AIM also lists suggested pilot actions and reports that volcanic ash clouds can extend hundreds of miles downwind of an eruption. It also states that ATC and airborne radars do not display the clouds.

The AIM asks all pilots who have not been told about a volcanic eruption, but who then see a volcanic ash cloud to report the sighting to ATC. The pilot may be the first person to report a new eruption. The AIM has a report form that lists the information that should be reported.

The important thing is to avoid flying into a volcanic ash cloud if at all possible. And if you have to operate in or out of an airport with volcanic ash on the runways, the AIM has suggested operating procedures designed to reduce the impact of the ash. The key items include the risk of reduced braking, the need to avoid disturbing the ash as much as possible to minimize engine ingestion, and the danger of reduced visibility from blowing ash. For a complete review of the recommended procedures, please see the AIM.

To *FAA AVIATION NEWS* Subscribers:

I just got off the telephone with an irate subscriber, complaining about receiving two copies of the magazine but being unable to reach the Government Printing Office's Customer Service Number, which we pubiish in the inside front cover of the magazine. If you have problems with your subscription or want a change of address, we've been encouraging you to call that number.

Over the past month, we've received dozens of calls from people who have been unable to get through. The man who made the most recent call was so mad I thought he'd come right through the fiber optics and stand in my office. "They've taken the phone off the hook, if you ask me," he said, "so they don't have to talk to us. Well, I don't have time for this, so I'll just cancel my subscription.

After trying to get to the bottom of the problem by calling around GPO we finally discovered that GPO had switched to a new, more efficient customer service telephone system—you know, one of those where you call in and have a menu to select from with your touchtone phone—and a brand new customer service number. The only problem is, they neglected to tell us about it.

Apparently this number change has been in the planning for months as part of a response to an overall restructuring of GPO to make it more customer friendly. It's just that, well, I guess they forgot that people might like to know the new number.

To all of you who called us or who gave up calling GPO because of the persistent busy signal, please accept our apologies. The new Customer Service Number appears in the inside front cover of this issue, but we'll repeat it here: (202) 512-1800 for the menu of services, including ordering over the phone, or (202) 512-1806 for subscription matters. The latter number also gets you a message that indicates a fax number, (202) 512–2168 customers can use.

Please try again, and this time you'll get through. How do I know? I tried it, and it worked. *—Editor*

Each One, Reach One—1995 WIAC

FAA Deputy Administrator Linda Daschle and National Business Aircraft Association President Jack Olcott will headline the list of speakers for the sixth annual International Women in Aviation Conference, March 16–18, 1995 in St. Louis, MO.

More than 20 concurrent sessions are planned throughout the conference. Topics will include India's women in aviation, a guide to flying for the physically handicapped, and teaching aviation in the classroom.

Three women will be inducted into the Women in Aviation Pioneers Hall of Fame: Major Eileen Collins, USAF, first female shuttle pilot for NASA; Bessie Coleman, first licensed African-

American female pilot; and Nadine Jeppesen, co-founder of the Jeppesen Company.

Sponsored by Parks College of Saint Louis University, the Women in Aviation Conference has grown from 170 attendees at its inaugural meeting in 1990. Dr. Peggy Baty, conference founder and director, anticipates 1,000 women and men interested in aviation to attend in 1995. "We also anticipate a 60% increase in the number of exhibitors over the last conference."

Baty will announce details of a new, international organization for women in aviation and hopes to unveil a new, commemorative stamp honoring Bessie Coleman at the conference. For information contact, Tami Baum of Parks College at (618) 337–7575, ext. 299.

Alphabet Soup

For those who look at NOTAMS and weather reports and see alphabet soup instead, FAA offers a new pamphlet titled "NOTAM and Weather Contractions Translator." As the pamphlet states, "You will notice some duplication and multiple definitions of the same contractions. Try to put the contractions you wish to define into the proper context with its associated text to determine the appropriate meaning." It was prepared by the FAA's Air Traffic Publications Branch, ATP-210, which also publishes the *Airman's Information Manual* in addition to providing other FAA services.

Copies of the pamphlet are available from your local Flight Standards District Office or by writing to the FAA, Air Traffic Publications Branch, ATP-210, 800 Independence Ave., SW, Washington, DC 20591.

New Student Pilot Guide

FAA has published the update of Advisory Circular (AC) 61–12M, *Student Pilot Guide*. The popular AC contains the answers to the most frequently asked questions about student pilot requirements, where to obtain flight training, choosing a flight school, the role of the instructor, and what flight training covers. The AC also outlines the differences between recreational pilot certificates and private pilot certificates, either of which a student pilot can obtain, depending on their training. In addition, the AC contains an appendix which tells student pilots how to obtain study materials.

AC 61–12M is available from New Orders,Superintendent of Docuuments, P.O. Box 371954, Pittsburgh, PA 15250–7954. Cost is $1.25.

General Aviation Industry Awards Program

The 1994 Industry Awards Program Selection Committee has chosen John J. Goglia of Saugus, MA, as the Maintenance Technician of the Year and William E. Huber of Albany, NY, as the Flight Instructor of the Year and honored them at the annual awards ceremony in Washington, DC, on October 28..

The Federal Aviation Administration (FAA), the AOPA Air Safety Foundation, the General Aviation Manufacturers Association (GAMA), and the National Business Aircraft Association (NBAA) sponsored the national awards and more than 15 general aviation companies participated in the Industry Awards Program providing special recognition to the winners for their achievements in the general aviation industry.

Goglia has made significant contributions to the maintenance profession, including helping develop new procedures for maintenance record keeping, improved national standards for technician training, and procedures for identifying approved aircraft parts.

Representing the interests of the machinists and maintenance technicians throughout the aviation industry, Goglia was also instrumental in passage of the General Aviation Revitalization Act of 1994. Through his personal testimony and commitment, in conjunction with the International Association of Machinists, he provided a significant and powerful push for the success of the legislation.

William Huber, FAA Adminstrator, David Hinson, and John Goglia (left to right).

During the past 21 years, John Goglia has been the Flight Safety Representative for the International Association of Machinists and Aerospace Workers (IAM/IAMAW) and USAIR. He has served as the team coordinator for IAM's Accident Investigation team for the past eight years. A former Fixed Base Operation (FBO) owner, Goglia was president of Air Carrier Support, Inc., providing line maintenance for commercial freight operators from 1984–1988.

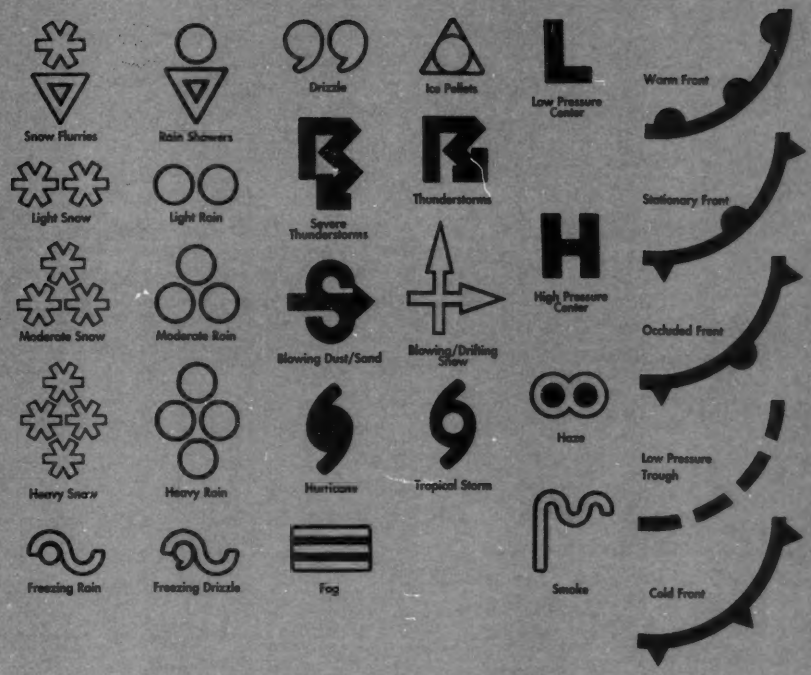
William Huber, a Certified Flight Instructor (CFII and MEI), has enjoyed 51 years of accident-free flying. Huber started his career in the military as a flight instructor and fighter pilot.

After World War II, Huber helped develop the aeronautics department of the University of Illinois, where he worked as an instructor. For the next ten years, he was a company pilot for Olan Mills Studio, Inc., while flight instructing part-time. Huber worked in advertising at RH Donnelley for 21 years and retired in 1982. Because of his passion for flying, he then returned to full-time flight instruction.

Of the more than 2,000 students Huber has instructed, over 100 have become CFI's. In addition to his valuable service to the general aviation industry, Huber was recognized by the FAA in 1990 for saving the life of a student who had become disoriented but was able to safely land because of Huber's calm guidance.

Donating the use of his plane and fuel and organizing other flight activities, Huber has also been the driving force behind the annual "Big Brothers and Big Sisters Flight Program" in Albany, NY. Through this program, Huber arranged educational workshops to stimulate children's interest in flying.

Winter Weather Information for Pilots



Things to Remember about Ice

1. Remember, there is no such thing as a little ice. Have an icing escape plan ready before you take off and use your "out" at the first sign of ice.
2. Turn the pitot tube heat on briefly during preflight and feel it to be sure it is working. Have it on well before entering clouds or reaching freezing temperatures.
3. Icing is very common over mountainous areas because of the lifting action and in the lee of the Great Lakes because of abundant moisture. Use extra caution in these areas and remember that alternate airports with instrument approaches may be scarce in the mountains.
4. When there is a chance of ice, be sure that you can reach warmer than freezing temperatures, either above or below your altitude, or clear air, within the performance of your aircraft.
5. If you are topping clouds to stay out of ice, remember that the "tops" become higher near the LOW pressure center.
6. If you are flying an aircraft equipped with deicing boots, it is a good idea to cycle the boots periodically, even when ice is not expected. This keeps the valves in the pneumatic system from sticking.
7. If climbing above an icing layer, don't climb at a steep angle of attack. This can allow ice to form on the underside of the wing, which quickly degrades performance.
8. Pass along icing and cloud top information to Flight Watch on 122.0.
9. When considering PIREP's for ice encounters, remember that aircraft of different sizes and wing shapes accumulate very differently. Look for reports on aircraft types similar to yours.
10. A "zero flap" or "partial flap" landing may be best when landing with a load of ice. Use higher than normal approach speeds. Consult your approved airplane flight manual.

Things to Remember in General About Winter Flying

1. If your aircraft's battery is dead, do not hand prop the aircraft. Have the battery serviced or use external power. Hand propping an aircraft is very dangerous.
2. Flight instruments need extra time to spin-up when they are cold. Be sure the cockpit is warmed-up and gyros are up to speed before takeoff.
3. Take blustery winter headwinds into account, especially if flying westbound, when planning for fuel requirements. Also check wind direction and speed at your destination and be sure it is within the aircraft's and your crosswind capability.
4. During engine start be cautious about over priming your engine. Have a fire extinguisher nearby in case of emergency. Preheating is the safest way to winter starts, and it is easier on the engine.
5. After a snowfall, remember that the landscape will no longer look like the VFR sectional chart. Many landmarks will most likeiy be snow covered.
6. Check with your destination airport for snow cover and removal operations. Airport surface conditions can change quickly with fast moving winter weather, and the latest information may not be in the NOTAM's.
7. Dress for survival when you fly this time of year. Also, pack a winter survival kit.

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